Sun Fire™ X4500/X4540 Server Windows Operating System Installation Guide

Sun Microsystems, Inc.
www.sun.com

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Contents

Preface

This document contains instructions for installing Windows Server 2003 onto a Sun Fire X4500 or X4540 server, and installing Windows Server 2008 onto a Sun Fire X4540 server.

Related Documentation

The document set for the Sun Fire X4500 or X4540 Server is described in the Where To Find documentation at:

http://docs.sun.com/app/docs/coll/x4500

http://docs.sun.com/app/docs/coll/x4540

Translated versions of some of these documents are available at the web site described above in French, Simplified Chinese, Traditional Chinese and Japanese. English documentation is revised more frequently and might be more up-to-date than the translated documentation.

For all Sun hardware, Solaris and other documentation, go to:

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Sun Fire X4500/X4540 Server Windows Operating System Installation Guide, part number 820-0407-18.

CHAPTER 1

Getting Started

This chapter describes the information you will need to know before installing Microsoft Windows Server 2003 on a Sun Fire X4500 and X4540, or installing Windows Server 2008 on a Sun Fire X4540 server.

Note – This chapter contains important guidelines and information to help you in the installation process. Make sure to read the remainder of this chapter before beginning the Windows Server installation.

The following sections are included in this chapter:

About Windows Server Installation

The Sun Fire X4500 and X4540 servers require mass storage drivers not included with the Windows Server 2003 operating system. For Windows Server 2008 (supported with the X4540 only), required drivers are included with the Windows Server 2008 distribution media.

Important Installation Considerations

Please note the following important considerations before beginning the Windows Server operating system installation on your Sun Fire server:

- When you install the Windows operating system, any data on the boot drive, including any preinstalled operating system, will be overwritten.
- A primary consideration during installation is providing the mass storage drivers for the disk controller. Windows Server 2008 (supported only for the X4540) distribution media provides the drivers required for your server. Windows Server 2003 media does not contain the mass storage drivers needed for operating system installation for your X4500 or X4540 server.
  - **If you install Windows using the Sun Installation Assistant,** all required drivers are supplied during installation. SIA can install supported versions of Windows via a local or remote CD/DVD. For more about SIA, see "Assisted Installation Using Sun Installation Assistant (SIA)" on page 4.
  - **If you install Windows manually,** using the Microsoft Windows installation media, Windows Server 2003 requires that the mass storage drivers be delivered from a floppy disk. The Windows Server 2003 installation program can only read mass storage drivers from a floppy disk.
- For a manual installation, there are three methods that can be used to deliver the mass storage drivers for Windows Server 2003 installation:
  - Use a physical USB floppy drive connected to the Sun Fire server.
  - Use a remote KVMS (remote Keyboard, Video, Mouse, Storage—allows redirection of the server keyboard, video output, mouse and storage devices via a networked system) to redirect the floppy to a physical floppy drive on another system that is hosting the JavaRConsole (JavaRConsole system—a remote console run from a networked system).
  - Use a remote KVMS to redirect the floppy to a floppy image file on another system that is hosting the JavaRConsole.
- For a manual installation, there are also three methods for delivering the Windows Server 2003 or Windows Server 2008 distribution media for installation:
  - Use the physical CD/DVD drive connected to the Sun Fire server.
  - Use a remote KVMS to redirect the CD/DVD drive to a physical CD/DVD drive on the JavaRConsole system.
  - Use a remote KVMS to redirect the CD/DVD drive to a Windows CD/DVD image on the JavaRConsole system.

- For a Sun Fire X4500 or X4540 server running Windows Server 2003, or a X4540 server running Windows Server 2008, RAID disk volumes are configured and managed by the Windows Disk Manager. For additional information about Windows Disk Manager, go to the following URLs:

  http://support.microsoft.com/kb/816307

  http://technet2.microsoft.com/WindowsServer/en/library/2c4910c6-1b83-40e5-810a-023993aa8b941033.mspx

The installation procedures described in this document will guide you through the process of selecting the installation methods for the mass storage drivers and operating system media.

Note – If you use the RKVMS method for any of these installations, you will need to refer to the *Sun Integrated Lights Out Manager 2.0 User's Guide* (820-1188), for details on setting up the hardware needed for the installation.

Supported Windows Operating Systems

The Sun Fire X4500 and X4540 servers support the following Microsoft Windows operating systems at the time of publication of this document:

- Microsoft Windows Server 2003, SP1 or later, Standard Edition (32-bit)
- Microsoft Windows Server 2003, SP1 or later, Enterprise Edition (32-bit)
- Microsoft Windows Server 2003 R2 and R2 SP2, Standard x64 Edition (64-bit)
- Microsoft Windows Server 2003 R2 and R2 SP2, Enterprise x64 Edition (64-bit)
- Microsoft Windows Server 2008, Standard Edition (32 or 64-bit) **X4540 only**
- Microsoft Windows Server 2008, Enterprise Edition (32 or 64-bit) **X4540 only**
- Microsoft Windows Server 2008, Datacenter Edition (32 or 64-bit) **X4540 only**

The updated list of supported operating systems is at the following server-specific URL:

http://www.sun.com/servers/x64/x4500/os.jsp

http://www.sun.com/servers/x64/x4540/os.jsp

Note – Sun includes an optional Disk Control and Monitoring (DCM) utility that helps you manage your Sun Fire X4500 and X4540 server disks. To use DCM, you must install Windows Server 2003 R2 or R2 SP2.

Assisted Installation Using Sun Installation Assistant (SIA)

The Sun Installation Assistant (SIA) is a tool supported for use with x64 Sun Fire and Sun Blade servers that assists in the installation of supported Linux and Microsoft Windows Server 2003 or Windows Server 2008 operating systems (OS). With SIA, you can install the OS, the appropriate drivers, and if necessary, additional system software by simply booting the SIA media and following the prompts.

SIA does not automate the OS installation process. You still need to follow the installation procedures for your OS, but you do not have to inventory your system hardware, search out and download device drivers most recently supported by Sun, nor will you need to create a separate driver CD. SIA does that work for you.

SIA Media Availability, Updates and Documentation

The Sun Installation Assistant CD/DVD ships with Sun servers that support the x64 processor architecture. For a complete list of supported Sun server platforms, refer to the SIA information page at:

http://www.sun.com/systemmanagement/sia.jsp

In addition, an ISO CD image of the Sun Installation Assistant is available for download from the Sun Download page at:

http://www.sun.com/download/index.jsp

Updates to the SIA program can be obtained easily during the SIA installation by using the Remote Update option in the SIA.

Documentation describing how to use SIA can be found with the rest of the documentation for your server on the Sun documentation web site:

http://docs.sun.com/app/docs/prod/server.x64

Manual Installation

This method is for more advanced users that are planning to manually install Microsoft Windows Server 2003 (X4500 and X4540) or Windows Server 2008 (X4540 only) locally, or remotely, on one or more servers.

Note – If you plan to install Windows Server 2003 or Windows Server 2008 using a Preboot Execution Environment (PXE) server, refer to Chapter 9, "Incorporating Sun Fire Drivers Into WIM or RIS Images" on page 67.

To install Windows Server 2003 or Windows Server 2008 from CD media onto a your server, complete the following procedures in order:

1. Downloading Server-Specific Driver Packages (see Chapter 2).
2. Selecting the Delivery Methods (see Chapter 3).
3. Prepare for Mass Storage Driver Delivery (see Chapter 4).
4. Configure the JavaRConsole System, only required if you are planning to install Windows from a remote console (see Chapter 5).
5. Installing Windows Server 2003 (see Chapter 6).
6. Installing Windows Server 2008 (X4540 Server Only) (see Chapter 7).
7. Update the Critical Server-Specific Drivers (see Chapter 8).

After completing these procedures, you will have successfully installed the Windows Server operating system.

CHAPTER 2

Downloading Server-Specific Driver Packages

This chapter describes how to download the server-specific driver packages needed for Windows Server 2003 (X4500 or X4540) and Windows Server 2008 (X4540 only) installation.

Note – If you have the Tools and Drivers CD, you can skip this chapter and proceed to "Selecting the Delivery Methods" on page 9. You can use the CD for initial installation of the server-specific drivers. The latest version of the Tools and Drivers CD is also available as a downloadable image on the Sun download site.

To download the drivers:

1. **Go to the driver download site for your server.**

   `http://www.sun.com/servers/x64/x4500/downloads.jsp`

   `http://www.sun.com/servers/x64/x4540/downloads.jsp`

2. **Choose one of the following download options:**

- **If you are installing using the Windows Server 2003 or Windows Server 2008 media, download the** `Windows.zip` **to a hard drive location or media that will be accessible during the installation. Extract the following sub-packages contained in** `Windows.zip`**:**

Note – The name of the windows package differs per server, however, it typically contains the word "`windows`" as part of the filename.

  - `FloppyPack_`*`x_x_x`*`.zip` (contains the LSI integrated disk controller driver for the Sun Fire X4540, or the Marvell Serial ATA Gen 2 PCI-X Adapter driver and the AMI virtual driver for the Sun Fire X4500). You will use this package to create driver media for your Windows Server 2003 installation, see "Selecting the Delivery Methods" on page 9.

- `InstallPack_x_x_x.exe` (program to update server-specific device drivers after installing Windows Server 2003 or Windows Server 2008)
- `DriverPack_x_x_x.zip` (for experts only, server-specific driver archive for Windows Server, English). Download this file if you want to perform a PXE installation described in Chapter 9, "Incorporating Sun Fire Drivers Into WIM or RIS Images" on page 67.
- `OptPack_x_x_x.zip` (for experts only, supplemental software archive). Download this file if you want to incorporate the supplemental software into a PXE installation.

- **If you are installing Windows Server using a PXE server (advanced installation), extract the contents of the `DriverPack_x_x_x.zip` file on the PXE server.**

Note – The *_x_x_x* number identifies the version of the package (for example, `FloppyPack_1_1_4.zip`).

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3. **Make sure that the driver packages are available as you begin the operating system installation. Proceed to "Selecting the Delivery Methods" on page 9 to select the delivery methods.**

CHAPTER 3

Selecting the Delivery Methods

In this chapter, you will decide on the delivery methods to provide the mass storage drivers required for Windows Server 2003 and the Windows Server 2008 media for installation.

Note – If you plan on installing Windows Server 2008 on the X4540 server, the mass storage drivers are included with the operating system. Windows Server 2008 is not supported on the X4500.

To select mass storage driver media and Windows Server 2003 media delivery methods, complete the following procedures:

1. Select a Mass Storage Drivers Method.
2. Select a Windows Server Distribution Media Method.
3. **Make a note of the delivery methods you selected and proceed to** "Prepare for Mass Storage Driver Delivery" on page 13.

Select a Mass Storage Drivers Method

Select a method listed in TABLE 3-1 that meets the need of your environment for providing the appropriate drivers for Windows Server 2003 installation. Make note of the method you have selected

Note – For Windows Server 2008, the Windows distribution media includes all drivers necessary for installing Windows on the Sun Fire X4540 server. If you are installing Windows Server 2003, you will need to supply mass storage drivers during the installation using one of the methods described below.

TABLE 3-1 Delivery Methods for Windows 2003 Mass Storage Drivers

Mass Storage Drivers Delivery Method	Additional Requirements	Ease of Configuration and Installation
Floppy Disk Local: Uses a physical USB floppy drive directly connected to the server's upper rear USB port.	• External USB floppy drive listed as "Designed for Windows"* on the Windows Marketplace site: http://www.windowsservercatalog.com/marketplace/ • Floppy disk	Easy
Floppy Disk Remote: Uses a remote KVMS to redirect to a physical floppy drive on the system hosting the JavaRConsole.	• JavaRConsole system with network access to your Sun Fire server's network management port and an attached floppy drive • Floppy disk	Medium: Installation time will be minimally increased over the Floppy Disk Local method.
Floppy Image: Uses a remote KVMS to redirect to a floppy image file on the system hosting the JavaRConsole.	• JavaRConsole system with network access to your Sun Fire server's management network port • Floppy image file	Medium: Installation time will be minimally increased over the Floppy Disk Local method.

* If you do not use a USB floppy drive designed for Windows, it might appear that the drivers are installed during the OS installation, but when you reboot the system, the graphical part of the Windows setup will be unable to find the drivers again and the installation will fail with an error message.

Select a Windows Server Distribution Media Method

Select a method listed in TABLE 3-2 that meets the need of your environment for providing the Windows Server 2003 or Windows Server 2008 distribution media for the Windows installation on your server. Make a note of the method that you selected.

TABLE 3-2 Delivery Methods for Windows Server Distribution Media

Windows OS Media Delivery Method	Additional Requirements	Ease of Configuration and Installation
Windows Local: Uses an external CD/DVD drive connected to the Sun Fire server.	External USB CD/DVD drive listed as "Designed for Windows"* on the Windows Marketplace site: http://www.windowsservercatalog.com/marketplace/	Easy
Windows Remote: Uses a remote KVMS to redirect the CD drive to a physical CD drive on the system hosting the JavaRConsole.	JavaRConsole system with the network access to the Sun Fire server network management port and an attached CD/DVD drive	Medium: Installation time will be significantly increased over the Windows Local method.
Windows Image: Uses a remote KVMS to redirect the CD drive to a Windows media image file on the system hosting the JavaRConsole.	JavaRConsole system with network access to the Sun Fire server management network port	Medium: Installation time will be significantly increased over the Windows Local method.

* If you do not use a USB floppy drive designed for Windows, it might appear that the drivers are installed during the OS installation, but when you reboot the system, the graphical part of the Windows setup will be unable to find the drivers again and the installation will fail with an error message.

CHAPTER 4

Prepare for Mass Storage Driver Delivery

This chapter contains instructions on preparing the necessary mass storage drivers media for Windows Server 2003 installation.

Note – If you are installing Windows Server 2008 on your Sun Fire X4540 server, the required mass storage drivers are included with the Windows distribution media. You can skip this chapter.

Depending on the method selected in "Selecting the Delivery Methods" on page 9, you will use one of the procedures in this chapter. See TABLE 4-1.

TABLE 4-1 Mass Storage Driver Delivery Methods

Delivery Method	Section to Read
Floppy Disk Local	"Create a Floppy Disk" on page 13
Floppy Disk Remote	"Create a Floppy Disk" on page 13
Floppy Image	"Copy the Floppy Image File" on page 19

Create a Floppy Disk

For the *Floppy Disk Local* or *Floppy Disk Remote* delivery method, you need to create a floppy disk containing the mass storage drivers before proceeding with the Windows Server 2003 installation.

Ensure that the following system configurations and materials are readily available:

- System with a floppy drive

- Floppy disk
- The latest Tools and Drivers CD for you server, or `FloppyPack_x_x_x.zip` (See "Downloading Server-Specific Driver Packages" on page 7 for details on obtaining `FloppyPack_x_x_x.zip`)

Note – The *_x_x_x* number identifies the version of the package (for example, `FloppyPack_1_1_4.zip`).

Proceed to one of the following sections:

- "To Create a Floppy Disk for the Sun Fire X4540 Server" on page 14
- "To Create a Floppy Disk for the Sun Fire X4500 Server" on page 16

▼ To Create a Floppy Disk for the Sun Fire X4540 Server

Sun provides a wizard to help create the necessary floppy disk required for Windows Server 2003 installation. The Sun Fire Mass-Storage Driver Disk Creation wizard may be started using one of the following methods: from the main menu of your server's Tools and Drivers CD, or from the `mkfloppy.exe` wizard. Directions for using either method are described below.

1. **Start the Sun Fire Mass-Storage Driver Disk Creation wizard using one of the following methods:**
   - **Insert the Tools and Drivers CD into a Windows system with a CD/DVD drive. The CD will autostart. At the main menu, select Make a Windows Server 2003 Mass Storage Driver Disk, and then proceed to** Step 2**.**

     --or--

   - **If you have downloaded** `FloppyPack_x_x_x.zip` **from the Sun download site (see** "Downloading Server-Specific Driver Packages" on page 7**), do the following to copy and extract the files:**

     i. **On a system running Microsoft Windows software with a floppy drive, copy the** `FloppyPack_x_x_x.zip` **file to a temporary directory.**

     ii. **Start Windows Explorer.**

     iii. **Navigate to the folder where you placed the downloaded file.**

     iv. **Select** `FloppyPack_x_x_x.zip`**.**

     v. **On the** File **menu, click** Extract All**.**

Note – If your version of Windows Explorer does not natively support compressed folders, use a third-party utility to extract the contents of the zip file. Make sure to maintain the directory structure of the folders after extracting them.

vi. **Extract the files into a new (empty) folder.**

vii. **Start Windows Explorer and navigate to the folder containing the extracted files.**

viii. **In Windows Explorer, open the directory containing the extracted files and double-click the `mkfloppy.exe` wizard, and then proceed to the next step.**

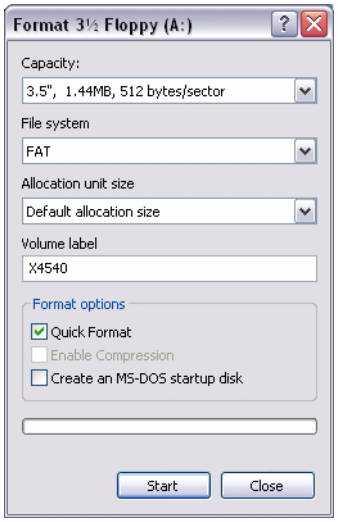
2. **At the Mass-Storage Driver Disk Creation wizard welcome page (see FIGURE 4-1), click Next and follow the instructions in the wizard to create the mass storage driver floppy disk for your server.**

   Insert a blank floppy disk into drive A: when prompted.

FIGURE 4-1 Mass-Storage Drivers Disk Creation Wizard Welcome Page

3. **At the Format 3 1/2 Floppy page (see FIGURE 4-2), click the Start button to begin formatting.**

FIGURE 4-2 Format 3 1/2 Floppy Page



4. **When the floppy disk formatting is complete, click the Close button.**

   The Format 3 1/2 Floppy page closes and you are returned to the Mass-Storage Driver Disk Creation wizard.

5. **Click Next and follow the instructions in the wizard to complete the creation of the mass storage driver floppy disk, and then do one of the following:**

   - If you are installing Windows remotely using the **Floppy Disk Remote** method, proceed to "Configure the JavaRConsole System" on page 21 to setup your remote console.
   - To begin installing Windows Server 2003 using the **Floppy Disk Local** method, proceed to "Installing Windows Server 2003" on page 27.

▼ To Create a Floppy Disk for the Sun Fire X4500 Server

Create the floppy disk using a Windows system with a floppy disk drive:

1. **Copy the driver packages onto the system that you will use to create the floppy:**

   - If you are using the Tools and Drivers CD to access the driver files, do the following to copy the files:

     i. **Insert the Tools and Drivers CD into a Windows system with a CD/DVD device.**

ii. **Navigate to the following directory:**

`windows\w2k3\packages\FloppyPack`

Note – The full name of the driver packages incorporates a version identifier before the file extension, for example, `FloppyPack_1_1_2.zip`. This identifier is left out of the file names in this document for purposes of clarity.

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iii. **Copy the files into a directory on the Windows system.**

- If you have downloaded `FloppyPack.zip` from the download site, do the following to copy and extract the files:

i. **On a system running Microsoft Windows software with a floppy drive, copy the** `FloppyPack.zip` **file to a temporary directory.**

ii. **Start Windows Explorer.**

iii. **Navigate to the folder where you placed the downloaded file.**

iv. **Select** `FloppyPack.zip`**.**

v. **On the** File **menu, click** Extract All**.**

If your version of Windows Explorer does not natively support compressed folders, use a third-party utility to extract the contents of the zip file. Make sure to maintain the directory structure of the folders after extracting them.

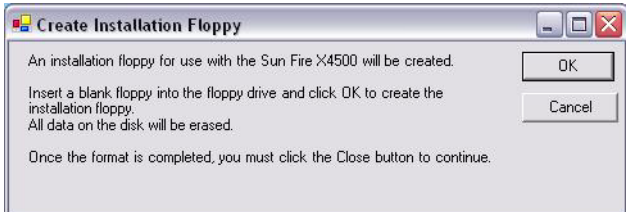
vi. **Extract the files into a new (empty) folder.**

2. **In Windows Explorer, open the directory containing the extracted files and double-click the** `mkfloppy.exe` **wizard.**

Note – If the application fails to start, review the `README.RTF` file located in the same folder as the `mkfloppy.exe` application.

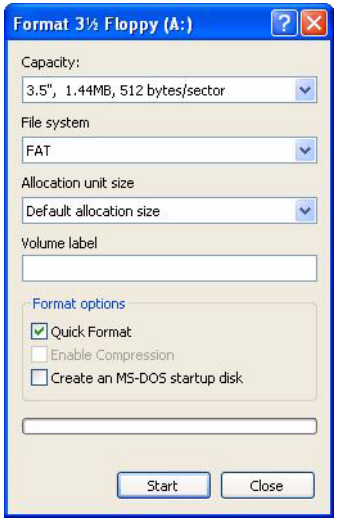
The Create Installation Floppy dialog box displays. Insert a blank floppy disk into drive A:, as prompted.

FIGURE 4-3 Create Installation Floppy Dialog Box



3. **At the Format 3 1/2 Floppy page (see** FIGURE 4-2**), click the Start button to begin formatting.**

FIGURE 4-4 Format 3 1/2 Floppy Dialog Box



4. **When the floppy disk formatting is complete, click the Close button.**

   The Format 3 1/2 Floppy dialog box closes.

5. **After the files have copied, click OK. Then do one of the following:**
   - If you are installing Windows remotely using the **Floppy Disk Remote** method, proceed to "Configure the JavaRConsole System" on page 21 to setup your remote console.
   - To begin installing Windows Server 2003 using the **Floppy Disk Local** method, proceed to "Installing Windows Server 2003" on page 27.

Copy the Floppy Image File

Use this procedure if you choose the *Floppy Image* method to install the mass storage drivers.

Ensure that a JavaRConsole system is available to host the driver files. This system must have access to the `FloppyPack.zip` driver package downloaded from the driver download site or on the Tools and Drivers CD (system software release 2.1, or later) as shown in "Downloading Server-Specific Driver Packages" on page 7.

▼ To Copy the Floppy Image File for the X4540 or X4500 Server

To copy the floppy image file using a Windows system:

1. **Prepare the driver files:**
   - **If you are using the Tools and Drivers CD to access the floppy package, do the following:**
     i. **Insert the CD into the JavaRConsole system.**
     ii. **Navigate to the following directory:**
     `windows\w2k3\packages\FloppyPack\image`
     and then proceed to Step 2**.**
   - **If you have downloaded** `FloppyPack.zip` **from the download site, do the following to copy and extract the files:**
     i. **Copy the** `FloppyPack_x_x_x.zip` **file to a temporary directory.**
     ii. **Start Windows Explorer.**
     iii. **Navigate to the temporary folder where you placed the downloaded file.**
     iv. **Select** `FloppyPack_x_x_x.zip`**.**
     v. **On the File menu, click Extract All.**

Note – If your version of Windows Explorer does not natively support compressed folders, use a third-party utility to extract the contents of the zip file. Make sure to maintain the directory structure of the folders after extracting them.

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vi. **Navigate to the folder where the extracted files reside.**

vii. **Navigate to the image folder, and then proceed to the next step.**

2. **Copy the `floppy.img` file to a folder on the JavaRConsole system that will be available during installation.**

   Note the `floppy.img` file location.

3. **To install Windows remotely using the Floppy Image method, proceed to "Configure the JavaRConsole System" on page 21 to setup your remote console.**

CHAPTER 5

Configure the JavaRConsole System

This chapter describes how to set up the JavaRConsole system to deliver the mass storage drivers (required for Windows Server 2003) and the Windows distribution media for operating system installation. If you do not plan on installing Windows from a remote system, you can skip this chapter.

Note – If you have chosen both the *Floppy Disk Local* (only required for Windows Server 2003 installations) and *Windows Local* delivery methods in "Selecting the Delivery Methods" on page 9, proceed to "Installing Windows Server 2003" on page 27.

- You will need to set up a JavaRConsole system if you have chosen any one of the following mass storage driver or Windows Server 2003 or Windows Server 2008 media delivery methods described in "Selecting the Delivery Methods" on page 9:
  - Floppy Disk Remote
  - Floppy Image
  - Windows Remote
  - Windows Image

Note – This procedure does not provide detailed instructions for setting up the JavaRConsole hardware. See the *Integrated Lights Out Manager (ILOM) Administration Guide* for your Sun Fire server for further information.

JavaRConsole System Requirements

The requirements for the JavaRConsole system are:

- Solaris, Linux, or Windows operating system is installed.
- The system must be connected to a network that has access to the Sun Fire server Ethernet management port.
- Java Runtime Environment (JRE) 1.5 or later is installed.
- If the JavaRConsole system is running on Solaris, volume management must be disabled for JavaRConsole to access the physical floppy and/or CD/DVD-ROM drives.
- If the JavaRConsole system is running on Windows Server 2003 or Windows Server 2008, Internet Explorer Enhanced Security must be disabled.

Setting Up the JavaRConsole System

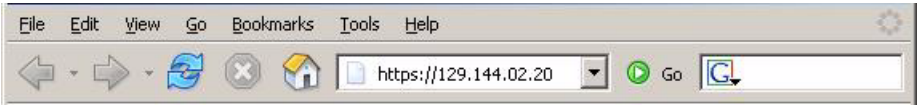
This section describes how to setup the JavaRConsole system to deliver the mass storage drivers during a remote Windows Server 2003 installation.

Note – This procedure assumes that the JavaRConsole system and ILOM service processor have been set up according to the instructions in the *Integrated Lights Out Manager (ILOM) Administration Guide* for your Sun Fire server.

▼ To Set Up the JavaRConsole System

1. **Start the remote console application by typing the IP address of the Integrated Lights Out Manager (ILOM) service processor into a browser on the JavaRConsole system.**

FIGURE 5-1 URL Sample



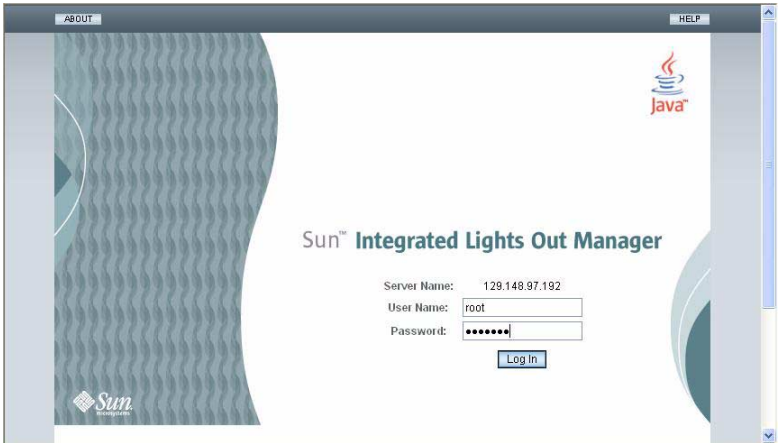
The Security Alert dialog box displays.

FIGURE 5-2 Security Alert Dialog Box

2. **Click Yes.**

   The ILOM login screen appears.

FIGURE 5-3 Login Screen



3. **Enter the user name and password and click Log In.**

   The default user name is **`root`** and default password is **`changeme`**.

The ILOM Version Information screen appears.

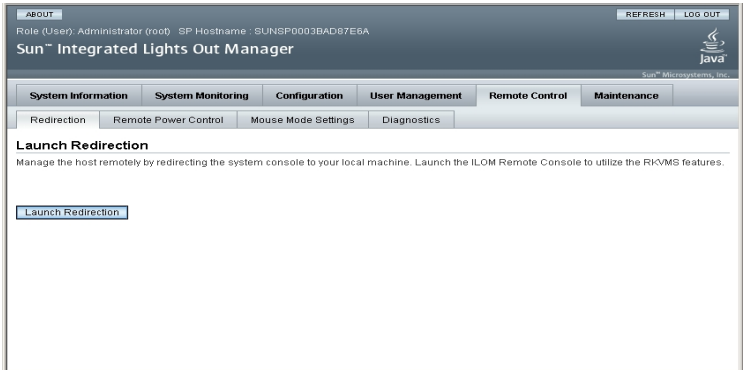
FIGURE 5-4 ILOM WebGUI Interface Version Information Screen

4. Click the Remote Control tab in the ILOM WebGUI.

The Launch Redirection screen appears.

Note – Make sure that the mouse mode is set to Absolute mode in the Mouse Mode Settings tab.

FIGURE 5-5 ILOM WebGUI Launch Redirection Screen



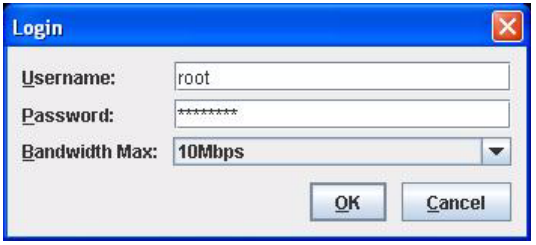
5. Click 8-bit color or 16-bit color, then click Launch Redirection.

Note – When using Windows for JavaRConsole system redirection, an additional warning appears after clicking Launch Redirection. If the Hostname Mismatch dialog box is displayed, click the Yes button.

FIGURE 5-6 Hostname Mismatch Dialog Box

The Remote Control dialog box appears.

FIGURE 5-7 Remote Control Login Dialog Box

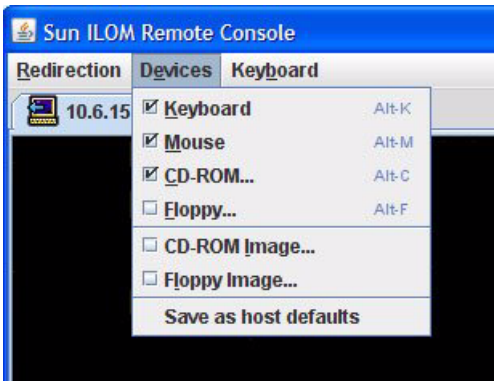


6. **In the Remote Control Login dialog box, enter your user name and password and click OK.**

   The default user name is **`root`** and password is **`changeme`**.

   After the login is successful, the JavaRConsole screen appears.

FIGURE 5-8 JavaRConsole Devices Menu



7. **From the Devices menu, select Floppy and/or CD-ROM according to the delivery method you have chosen.**
   - **Floppy Disk Remote:** Select Floppy to redirect the server to the contents of the physical floppy drive attached to the JavaRConsole system.
   - **Floppy Image:** Select Floppy Image to redirect the server to the mass storage drivers floppy image file located on the JavaRConsole system.
   - **CD-ROM Remote:** Select CD-ROM to redirect the server to the operating system software CD/DVD contents from the CD/DVD-ROM drive attached to the JavaRConsole system.
   - **CD-ROM Image:** Select CD-ROM Image to redirect the server to the operating system software `.iso` image file located on the JavaRConsole system.

Caution – Using the CD-ROM Remote or CD-ROM Image options to install the Windows Server 2003 or Windows Server 2008 will significantly increase the time necessary to perform the installation as the content of the CD/DVD is accessed over the network. The installation duration will depend on the network connectivity and traffic.

CHAPTER 6

Installing Windows Server 2003

This chapter describes how to install the Windows Server 2003 operating system onto a Sun Fire X4500 or X4540 server using the Windows Server 2003 media.

Installation Requirements

Before beginning the operating system installation, make sure that the following requirements are met.

For all installation methods:

- Complete the procedures in the previous chapters of this document (Chapters 2 through 5).
- Verify that a keyboard and mouse are attached to the appropriate connections on your server. Make sure to leave a USB port free if you selected the **Floppy Disk Local** mass storage drivers installation method.
- For information about specific details on Windows Server 2003 installation, refer to your Microsoft Windows documentation.

Note – The complete Microsoft Windows Server 2003 installation process is not documented in this section. This section documents only the steps that are specific for installing Windows Server 2003 on your Sun Fire server.

For requirements specific to the mass storage driver and Windows Server 2003 media delivery methods that you have chosen, see TABLE 6-1.

TABLE 6-1 Requirements for Each Installation Method

Method	Action or items required
Floppy Disk Local	Insert the mass-storage drivers floppy disk into a USB floppy drive attached directly to the server's upper rear USB port to be correctly recognized as A: to use the Floppy Local mass storage drivers installation method. Using any other USB port will cause the installation to fail.
Floppy Disk Remote	Connect the floppy drive to the JavaRConsole system (if necessary) and insert the mass-storage drivers floppy disk into the floppy drive.
Floppy Image	Ensure that the `floppy.img` file is accessible from the JavaRConsole system.
Windows Local	Make sure that the Microsoft Windows Server 2003 installation media and a DVD-ROM drive are available.
Windows Remote	Insert the Microsoft Windows Server 2003 installation media into the JavaRConsole system's CD or DVD-ROM drive.
Windows Image	Ensure that the Windows Server 2003 installation media is accessible from the JavaRConsole system.

Installing the Operating System

Follow these steps to install the Microsoft Windows Server 2003 software onto your Sun Fire X4500 or X4540 server.

Note – The Solaris Operating System may be preinstalled on your server's boot disk. The Windows installation formats the boot disk and all data will be lost.

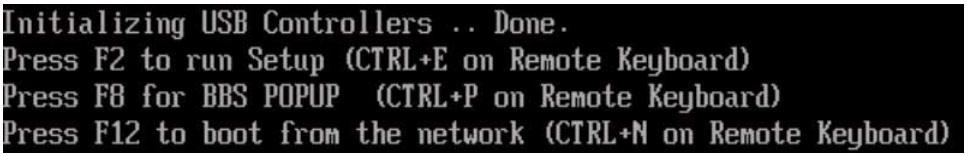
1. **Make sure that you have completed all of the requirements listed in** Installation Requirements**.**
2. **Power cycle your server.**

   The BIOS POST process begins.
3. **Press F8.**

   When the `Press F8 for BBS POPUP` prompt appears on the BIOS POST screen (see FIGURE 6-1).

   The BBS POPUP menu allows you to select a boot device.

FIGURE 6-1 F8 Prompt Example



4. **Once the BIOS POST process is complete, boot the system with the Solaris DVD disk or the DVD image.**

   At command selection menu, select `6` (Single use shell). You will see:

```
Searching for installed OS instances...
/dev/dsk/c4t0d0s0 is under md control, skipping.
/dev/dsk/c4t4d0s0 is under md control, skipping.
No installed OS instance found.
```

Note – In this example, **`c4t0d0`** is the boot disk and **`c4t4d0`** is the boot mirror. Note that the controller number (**`c`***) may be different on your system. Record your boot disk and use the corresponding value in Step 5.

---

5. **Run command** `fdisk /dev/rdsk/c4t0d0p0`**.**

   At the command selection menu, select `3` (Delete a partition). At partition number input menu, input `1`, then press `y`. At command selection menu, select `5` (Exit).

6. **After those operations, Windows 2003 can recognize the boot disk that was uninitialized.**

7. **Reboot system. If you have selected the Windows Local installation method, insert the Windows media CD in the server's CD/DVD drive now.**

8. **Select** `CD/DVD` **from the Boot Device menu and press Enter.**

   If prompted with `Press any key to boot from CD`, quickly press any key.

   The Windows Setup process begins.

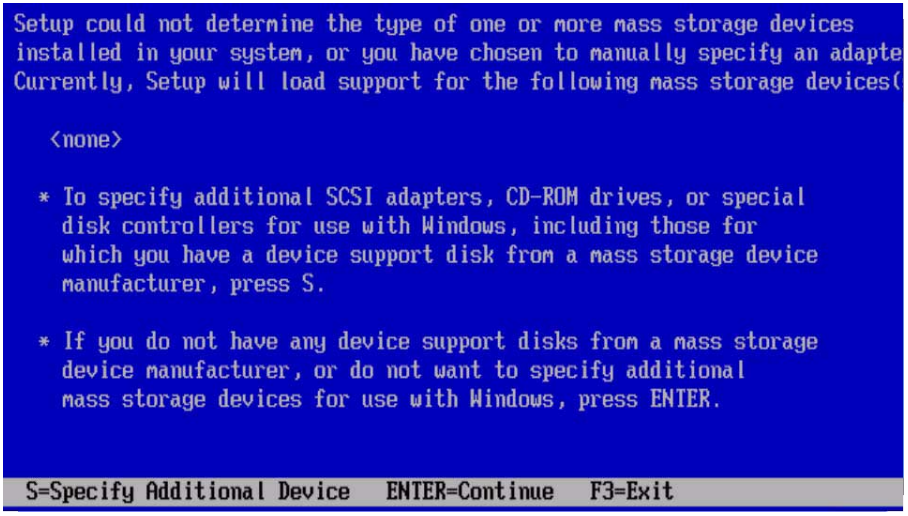
9. **Press F6 when you see the following prompt at the bottom of the screen during the Windows Setup process:**

```
Press F6 if you need to install a third party SCSI or RAID
driver.
```

Note – The prompt is displayed in the early stages of Windows Setup and lasts for approximately five seconds and is easy to miss. If you do not press F6 while the prompt is being displayed, the screen allowing you to specify additional drivers is not displayed and the installation will fail. You will need to restart the system and go back to Step 3.

After pressing F6, a screen appears providing you with the option to specify additional mass storage devices.

FIGURE 6-2 Specify Additional Device Screen



10. **Make sure that the mass storage drivers are accessible according to the mass storage driver installation method that you have selected.**
    - **Floppy Disk Local:** Mass storage drivers floppy disk in floppy drive A on the server
    - **Floppy Disk Remote:** Mass storage drivers floppy disk in the JavaRConsole server floppy drive
    - **Floppy Image:** `floppy.img` available on the JavaRConsole system

11. **Press `S` to specify additional devices.**

    A screen appears listing the available drivers. Refer to FIGURE 6-3 for the Sun Fire X4540, or FIGURE 6-4 for the Sun Fire X4500.

FIGURE 6-3 Select Mass Storage Adapter Screen for the Sun Fire X4540

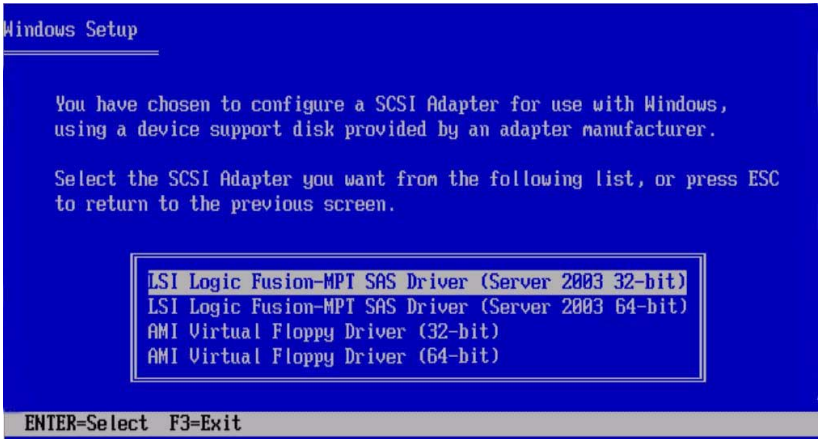
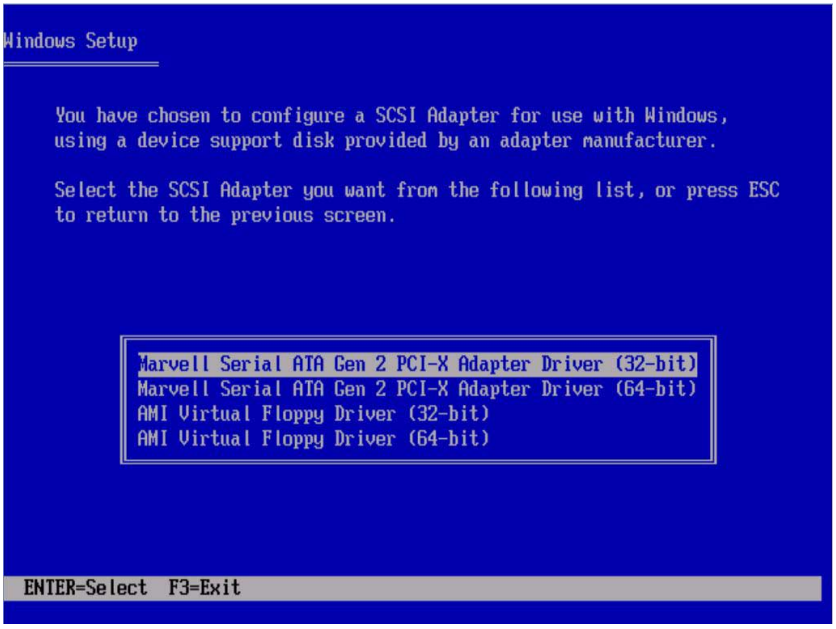


FIGURE 6-4 Select Mass Storage Adapter Screen for the Sun Fire X4500



12. **Select the appropriate driver version depending on the version of Windows Server 2003 you are installing (32-bit or 64-bit), then press Enter.**

    Windows Setup will then display your selection.

13. **Windows Setup lists the mass storage driver to be installed (example shown in FIGURE 6-5). Press Enter to continue.**

FIGURE 6-5 Sun Fire X4540 Example Specify Additional Device Screen

14. **Do one of the following:**

    - **If you are installing Windows using the Floppy Disk Local method, press Enter and skip to Step 17.**
    - **If you are installing Windows remotely using the Floppy Disk Remote or the Floppy Image delivery method, you will need to install the AMI virtual floppy driver. Press S.**

      Windows Setup then displays a list of available drivers. Proceed to the next step.

FIGURE 6-6 Select Mass Storage Adapter Screen for the Sun Fire X4540

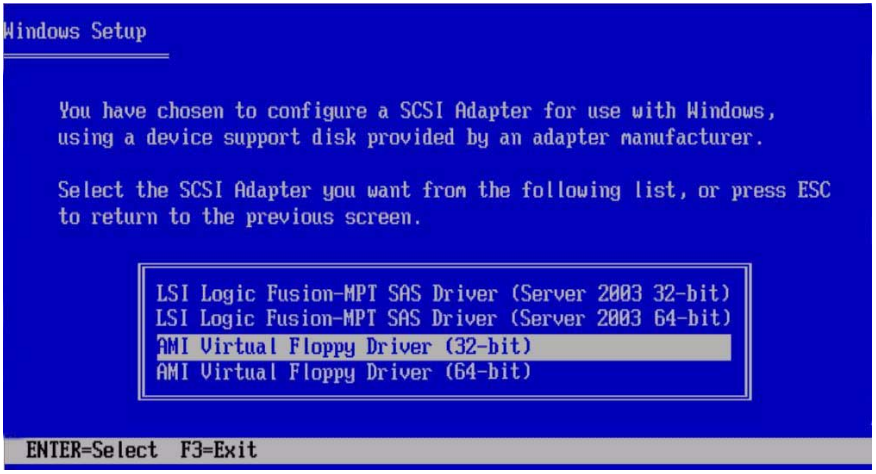
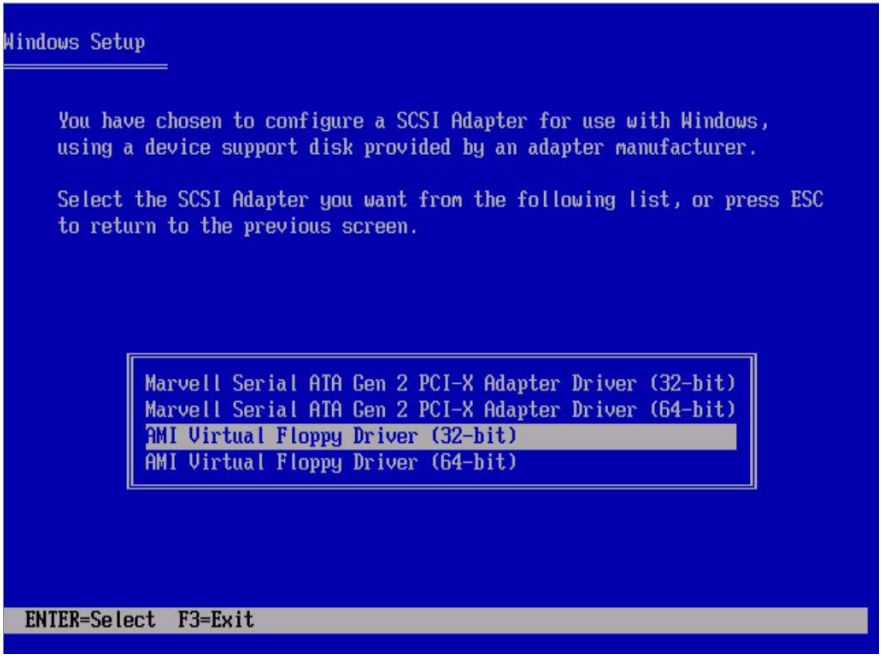


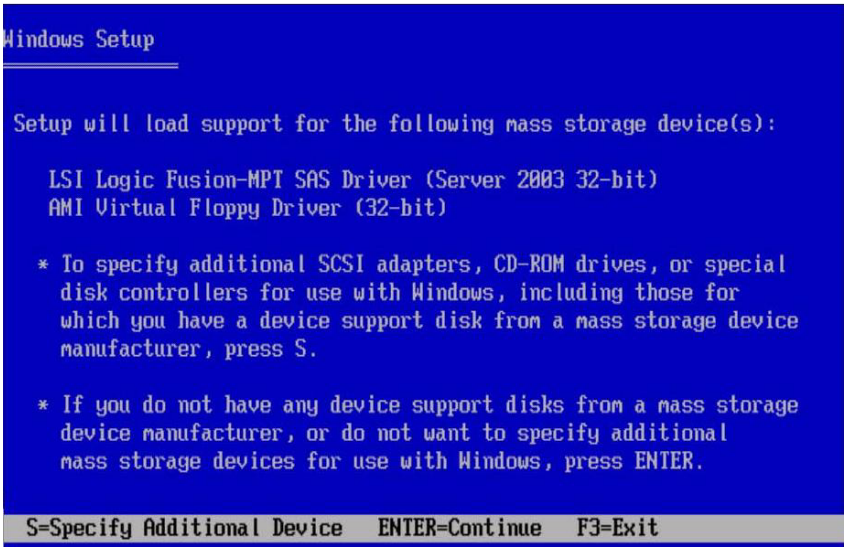
FIGURE 6-7 Select Mass Storage Adapter Screen for the Sun Fire X4500



15. **Select the appropriate version of the AMI Virtual Floppy Driver, depending on the version of Windows you are installing (32-bit or 64-bit), and then press Enter.**

    Windows Setup then displays a screen showing both drivers you have selected (example shown in FIGURE 6-8).

FIGURE 6-8 Sun Fire X4540 Example Specifying Selected Drivers



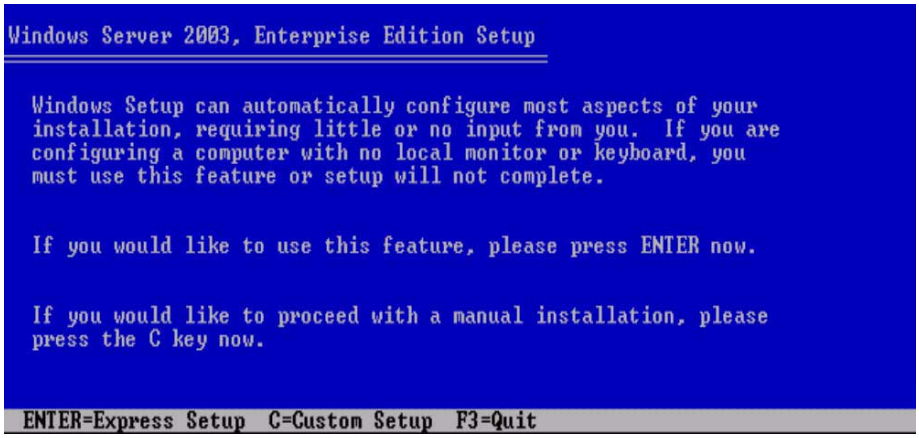
16. **Confirm your choice and press Enter to continue.**

    The Welcome to Setup screen is displayed.

17. **At the Welcome to Setup screen, press Enter to continue.**

    The Setup Selection screen is displayed.

FIGURE 6-9 Setup Selection Screen



18. **Press either Enter to select Express Setup, or C to select Custom Setup**.

19. **Follow the on-screen instructions to complete the initial setup of Windows Server 2003 until you are prompted with the following message:**

    `Remove disks or other media. Press any key to restart.`

    When this message appears, do one of the following, depending on which driver delivery method you have chosen, to complete the installation:

    - **Floppy Disk Local:** Remove the floppy disk from the floppy drive on the server.
    - **Floppy Disk Remote:** Remove the floppy disk from the JavaRConsole server.
    - **Floppy Image:** Deselect Floppy Image from the JavaRConsole Devices menu.

    Then, press any key to restart the system and complete the Windows Server 2003 Installation.

20. **Proceed to** "Update the Critical Server-Specific Drivers" on page 43 **"Updating the Critical Server-Specific Drivers."**

CHAPTER 7

Installing Windows Server 2008 (X4540 Server Only)

This chapter describes how to install the Windows Server 2008 operating system directly onto your Sun Fire X4540 server using the Windows Server 2008 media.

Note – Windows Server 2008 is not supported on the Sun Fire X4500 server.

Installation Requirements

Before beginning the operating system installation, make sure that the following requirements are met.

For all installation methods:

- Complete the procedures in the previous chapters of this document that apply (Chapters 2 through 5).
- Verify that a keyboard and mouse are attached to the appropriate connections on your server.
- For information about specific details of the operating system installation, refer to your Microsoft Windows documentation.

Note – The complete Microsoft Windows operating system installation process is not documented in this section. This section documents only the steps that are specific for installing Windows Server 2008 on your server.

For requirements specific to the Windows media delivery methods that you have chosen earlier, see TABLE 7-1. Note that the mass storage driver for your server's integrated disk controller is included in the Windows Server 2008 distribution media.

TABLE 7-1 Requirements for Each Installation Method

Method	Action or items required
Windows Local	Make sure that the Microsoft Windows Server 2008 installation media and a DVD-ROM drive are available.
Windows Remote	Insert the Microsoft Windows Server 2008 installation media into the JavaRConsole system's DVD-ROM drive.
Windows Image	Ensure that the Windows Server 2008 installation media is accessible from the JavaRConsole system.

Installing the Operating System

Follow these steps to install the Microsoft Windows Server 2008 software onto your your server.

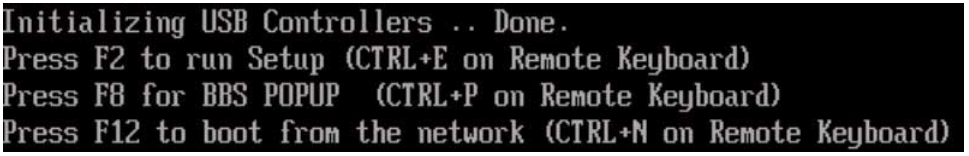
Note – The Solaris Operating System may be preinstalled on your server's boot disk. The Windows installation will format the boot disk and all data will be lost.

1. **Make sure that you have completed all of the requirements listed in** "Installation Requirements" on page 37**.**
2. **Power cycle your server.**

   The BIOS POST process begins.
3. **Press F8 when the** `Press F8 for BBS POPUP` **prompt appears on the BIOS POST screen (see** FIGURE 7-1**).**

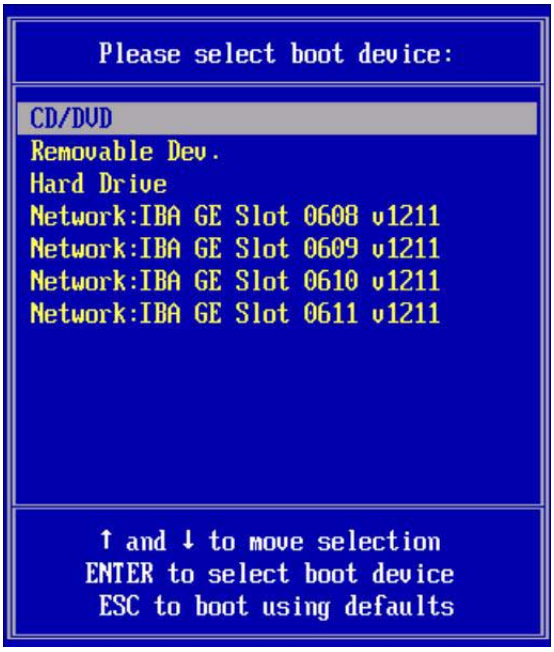
   The BBS POPUP menu will allow you to select a boot device.

FIGURE 7-1 F8 Prompt Example



4. **Once the BIOS POST process is complete, the Boot Device menu appears (see FIGURE 7-2). If you have selected the Windows Local installation method, insert the Windows media DVD in the server's DVD drive now.**

FIGURE 7-2 Boot Device Menu Example

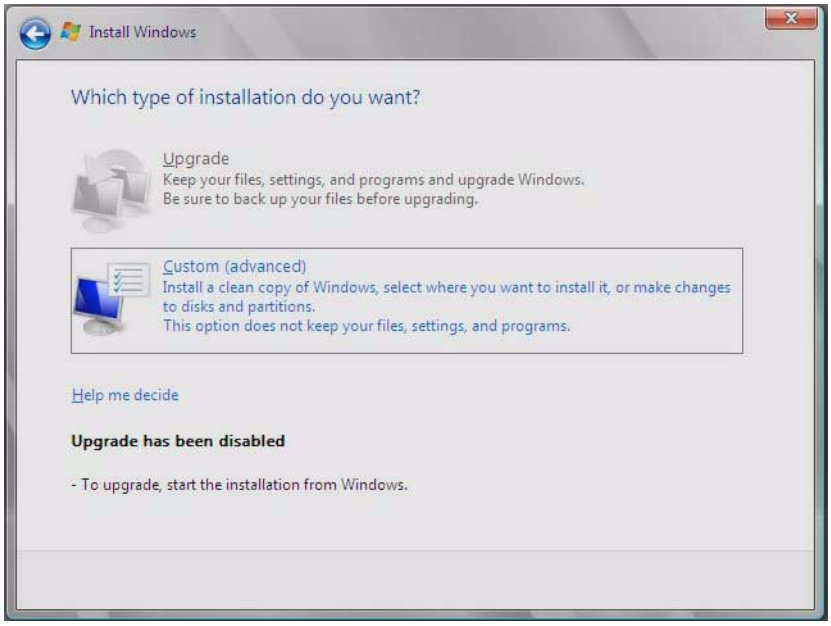


5. **Select** `CD/DVD` **from the Boot Device menu and press Enter.**

   If prompted with `Press any key to boot from CD`, quickly press any key.

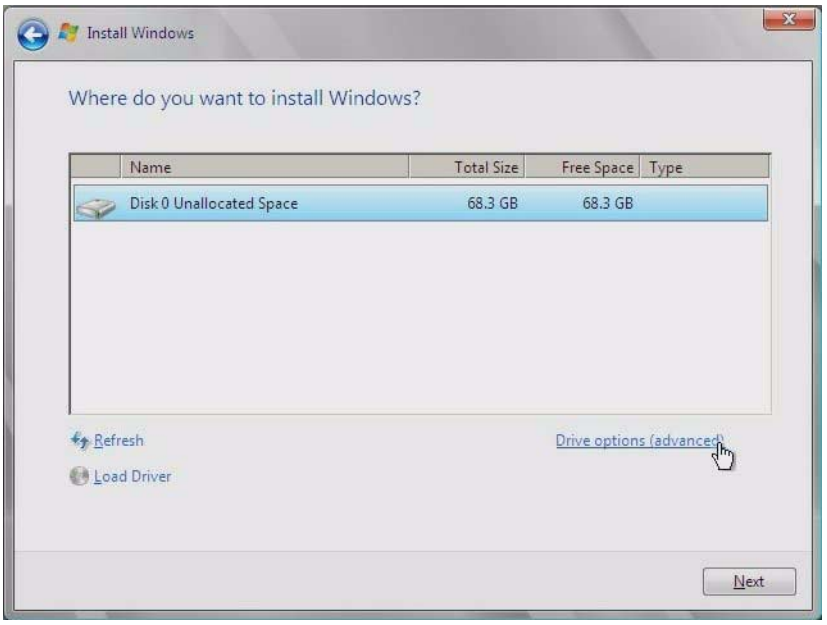
6. **The Windows installation wizard starts. Proceed through the installation wizard until you see the Installation Type page displayed, and then click Custom (advanced).**

FIGURE 7-3 Select Installation Type Page



7. **You will then see the Where to Install Windows page (see FIGURE 7-4), do one of the following:**

FIGURE 7-4 Where to Install Windows Page Example



- **If you *do not* want to override the Windows default partition settings, click Next and skip to** Step 9**.**
- **If you *do* want to override the Windows default partition settings, click Driver Options (advanced) and proceed to the next step.**

Caution – Formatting or re-partitioning a pre-existing partition will destroy all data on the partition.

8. **At the Advanced Driver Options page (see** FIGURE 7-5**), do the following:**

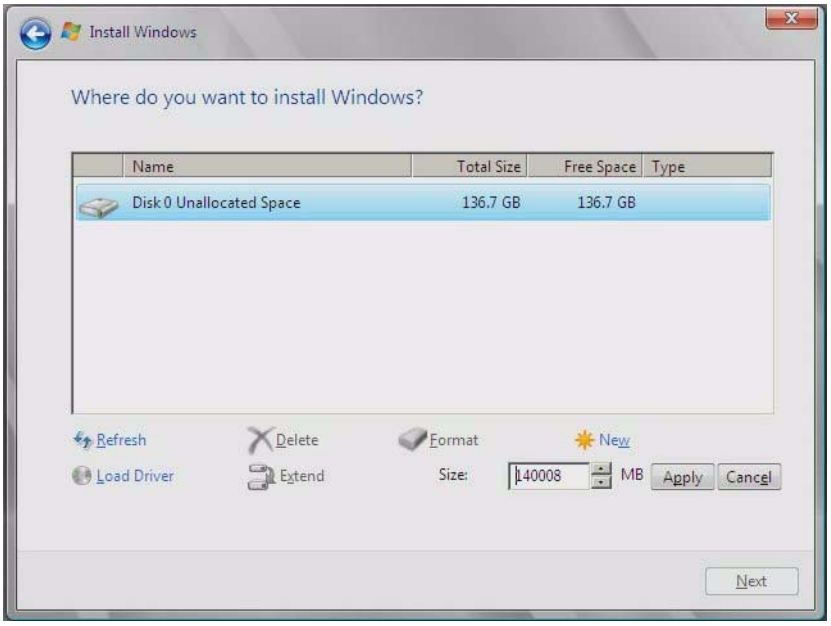
   a. **Click Delete to delete the existing partition.**

   b. **Click New to create the new partition.**

   c. **Change size settings as needed, and then click Apply.**

   d. **Click Next and proceed to the next step.**

FIGURE 7-5 Windows Partition Management Page



9. **The Windows installation begins.**

   The server will reboot multiple times during the installation process.

10. **When Windows installation is complete, Windows starts and prompts you to change the user password. Click OK and proceed to setup your initial user login account.**

Note – Windows Server 2008 enforces stronger password schemes for user accounts. Password standards include restrictions on length, complexity and history. If you need more details, click the Accessibility link at the account creation page.

Once you have created your initial account, the Windows Server 2008 desktop is displayed. The Windows Server 2008 interface is new, review the Microsoft documentation to familiarize yourself with the changes.

11. **Proceed to** "Update the Critical Server-Specific Drivers" on page 43 **to install server-specific software and the latest Sun-supported drivers.**

CHAPTER 8

Update the Critical Server-Specific Drivers

This chapter describes how to update the Windows Server 2003 or Windows Server 2008 installation with server-specific device drivers.

This chapter contains the following sections:

The procedures in this chapter assume that you already:

- Installed the Microsoft Windows Server 2003 (X4500 or X4540) or Windows Server 2008 (X4540 only) operating system.
- Downloaded `Windows.zip` and extracted `InstallPack_`*`x_x_x`*`.exe` as described in "Prepare for Mass Storage Driver Delivery" on page 13. Or have downloaded the latest version of your server's Tools and Drivers CD.
- Have `InstallPack.exe` or your server's Tools and Drivers CD readily accessible by the server.

Note – The *_x_x_x* number identifies the version of the package (for example, `InstallPack_1_1_4.zip`).

Pre-installation Requirements for Disk Control and Monitoring

If you plan on installing the optional Disk Control and Monitoring (DCM) software for a Sun Fire X4500 or X4540 running Windows Server 2003 R2 or R2 SP2 (for a description of DCM see "Installing Supplemental Software" on page 50), you must first install the Microsoft .NET Framework Version 2.0 Redistributable Package, and the IPMI System Management driver. Perform the following steps:

1. **Install the Microsoft .NET Framework version 2.0 package.**
   - **If you have a supported Windows Server 2003 version earlier than R2**, you will need to download and install the Microsoft .NET Framework 2.0 package from this URL: `http://www.microsoft.com/downloads/details.aspx?FamilyID=0856EACB-4362-4B0D-8EDD-AAB15C5E04F5&displaylang=en`. Once you have completed the installation, skip to Step 7.
   - **If you have Windows Server 2003 R2 or R2 SP2,** the Microsoft .NET Framework version 2.0 is included but not installed. Proceed to Step 2.
2. **On the taskbar, click Start, then click Control Panel.**
3. **In Control Panel, double-click Add/Remove Programs.**
4. **In Add/Remove Programs, click Add/Remove Windows Components, and select "Microsoft .NET Framework 2.0".**
5. **Click OK.**
6. **Click Next.**

   The .NET framework is installed. Proceed the next step.
7. **Install the IPMI System Management driver and the Disk Monitoring and Control software.**
   - **If you have a supported Windows Server 2003 version earlier than R2**, proceed to "Updating the Server-Specific Drivers" on page 45 and install Supplemental Software. The supplemental software supplies the required IPMI System Management driver for supported Windows Server 2003 versions earlier than R2, and the Disk Monitoring and Control utility.
   - **If you have Windows Server 2003 R2 or R2 SP2,** proceed to "Updating the Server-Specific Drivers" on page 45 and install Supplemental Software. The supplemental software contains the Disk Monitoring and Control utility. Then, instantiate the Microsoft IPMI System Management driver as described in "Completing the IPMItool Installation" on page 62.

Updating the Server-Specific Drivers

Sun provides a wizard to install Sun server-specific drivers and supplemental software. The Sun Fire Installation Package wizard may be started using one of the following methods: from the main menu of your server's Tools and Drivers CD, or from the `InstallPack_x_x_x.exe` executable file. Directions for using either method are described below.

▼ To Update the Server-Specific Drivers

1. **Start the Sun Fire Installation Package software using one of the following methods:**

   - **For the Sun Fire X4540: Insert the Tools and Drivers CD into a USB external CD/DVD drive. The CD will autostart. At the main menu, select Install Drivers and Supplemental Software.**

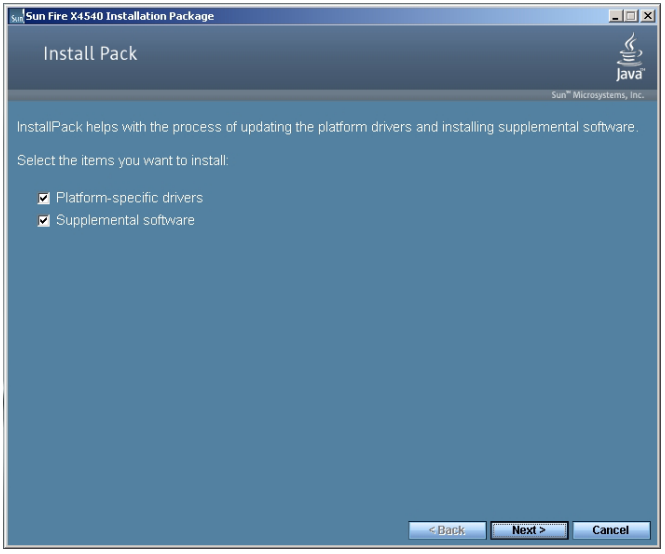
     --or--

   - **For the Sun Fire X4500 or X4540: If you downloaded the `InstallPack_x_x_x.exe` file from the Sun download site (as described in "Downloading Server-Specific Driver Packages" on page 7), ensure that it has been copied to a local drive on the server, and then run the `InstallPack_x_x_x.exe` application.**

   The Sun Fire Install Package dialog box (shown below) displays.

Note – Screen examples shown here are for the Sun Fire X4540 server. If you have a Sun Fire X4500, the examples will appear slightly different, but the actions to perform are the same.

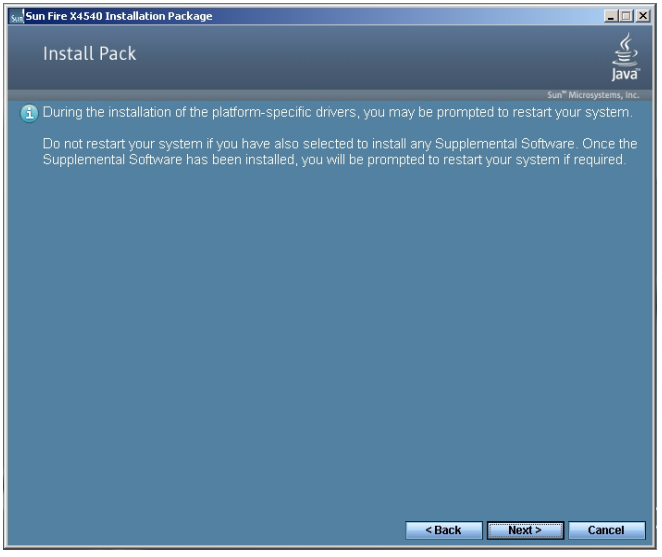
FIGURE 8-1 Sun Fire Installation Package Dialog Box Example



2. **Click Next to accept the default settings.**

   Note that you should always accept the "Platform-specific drivers" to ensure that the most recent versions of the drivers are installed. Sun also recommends accepting the "Supplemental software" to ensure you can take full advantage of the server's feature set. The Install Pack notice dialog box displays.

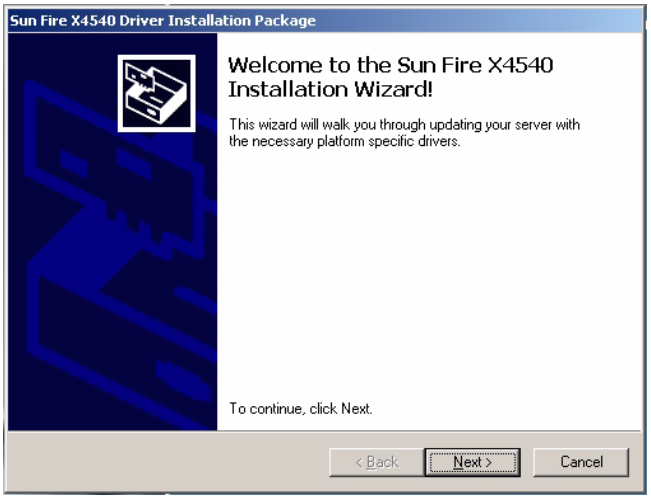
FIGURE 8-2 Install Pack Notice Dialog Box Example



3. **Review the Important Note and then click Next.**

   The Welcome to the Sun Fire Installation Wizard displays.

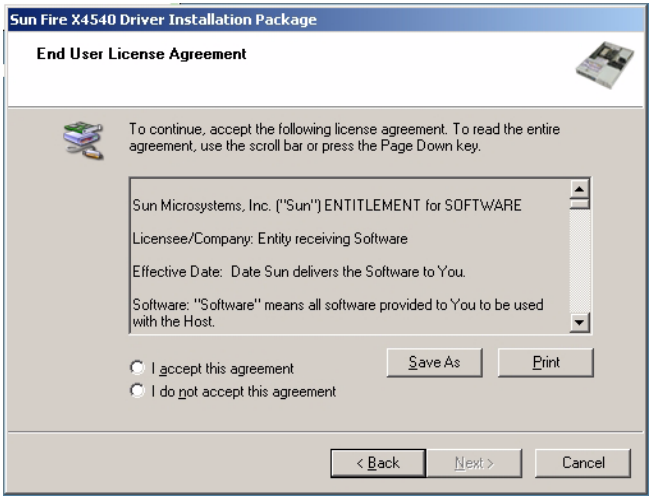
FIGURE 8-3 Sun Fire Installation Wizard Example



4. **Click Next.**

   The End User License Agreement page appears.

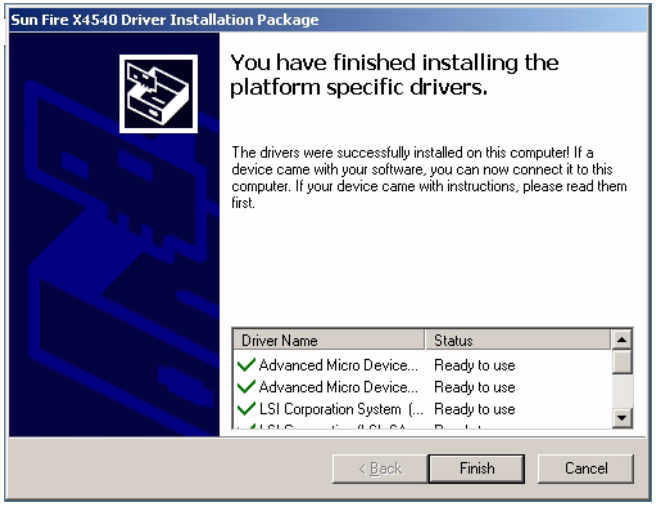
FIGURE 8-4 End User License Agreement Page



5. **Select "I accept this agreement", and then click Next.**

   The platform-specific drivers are installed (see FIGURE 8-5). A green check mark verifies that each driver has been successfully installed.

FIGURE 8-5 Finished Installing Page Example



6. **Click Finish.**

   The System Settings Change dialog box displays (see FIGURE 8-6).

FIGURE 8-6 System Settings Change Dialog Box

Note – If you plan on installing Supplemental Software (highly recommended), do not restart your system at this time. Once the Supplemental Software has been installed, you will be prompted to restart the system.

---

7. **If you accepted the default settings in** Step 2**, click No to proceed to** "Installing Supplemental Software" on page 50**.**

   If you are not installing the Supplemental Software, click Yes to restart your computer.

Installing Supplemental Software

There are supplemental software components available for your Sun Fire server. You have two options for installation: **Typical**, where basic choices are made for you (as indicated in the table below), and **Custom**, which is a superset of Typical and includes all software components of Typical plus additional software components you can select.

TABLE 8-1 Install Pack Supplemental Software

Server Support	Available Components	Windows Server 2003 (X4500 and X4540)	Windows Server 2008 (X4540 Only)
X4540 and X4500	**Disk Control and Monitoring Utility**—Manages disk drives and reports to the BMC disk drive status and Field Replaceable Unit (FRU) information. Fully described in "Disk Control and Monitoring" on page 77.	Typical	Not applicable
X4540 and X4500	**ipmitool—**Command line utility that reads the sensor data repository (SDR) and displays sensor values, System Event Log (SEL), Field Replaceable Unit (FRU) inventory information, gets and sets LAN configuration parameters, and performs chassis power control operations via the BMC (also called the Service Processor). For Windows Server 2003 installations. After installation, refer to "Completing the IPMItool Installation" on page 62)	Typical	Typical
X4540 and X4500	**IPMI System Management Driver (Sun Microsystems)—**Windows driver that reads the sensor data repository (SDR) and displays sensor values, System Event Log (SEL), Field Replaceable Unit (FRU) inventory information. **Installs for supported Windows Server 2003 versions earlier than R2 only, is not applicable for Windows Server 2003 R2 versions or Windows Server 2008.**	Typical	Not applicable
X4500 ONLY	**Intel NIC Teaming—**teaming features include fault tolerance, load balancing, link aggregation, and Virtual LAN (VLAN) tagging After installation, refer to "Using Intel NIC Teaming (X4500 Server Only)" on page 53**.**	Typical	Typical

TABLE 8-1 Install Pack Supplemental Software

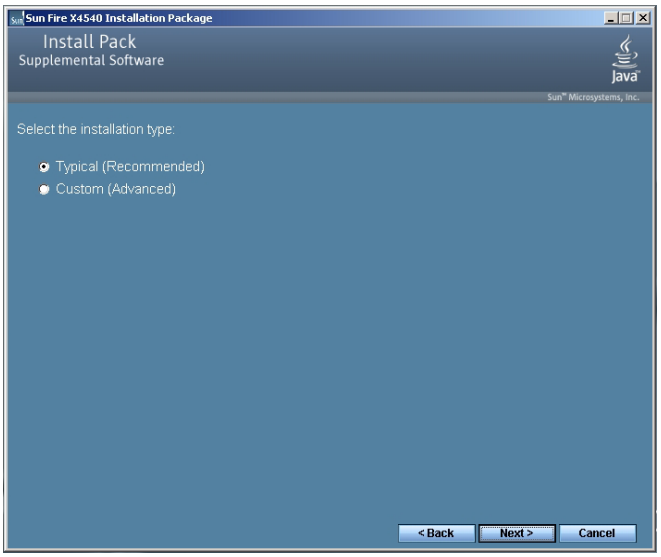
Server Support	Available Components	Windows Server 2003 (X4500 and X4540)	Windows Server 2008 (X4540 Only)
X4540 ONLY	**NVIDIA Network Access Manager (NAM)—**Ethernet interface configuration, optimization and teaming solution available for servers with integrated NVIDIA Gigabit Ethernet. After installation, refer to "Using the NVIDIA Network Access Manager for Windows Server 2003 (X4540 Server Only)" on page 56.	Custom	Custom
X4540 and X4500	**AMD MCAT—**Machine Check Analysis Tool (MCAT) is a command line utility that takes Windows System Event Log (.evt) file as an argument and decodes the MCA error logs into human readable format.	Custom	Custom
X4540 and X4500	**AMD Power Monitor—**AMD Power Monitor is intended to show the current frequency, voltage, utilization and power savings of each core on each processor in the system.	Custom	Custom

▼ To Install Supplemental Software

Note – If you have already installed the supplemental software, running the installation again will not necessarily reinstall the supplemental software. It may result in the components being removed. Carefully review the dialog boxes during supplemental software installation to ensure that the results are as expected.

If you selected **Supplemental Software** at the initial Installation Package page (see FIGURE 8-1) in Step 2, and selected **No** in Step 7, the Supplemental Software dialog box displays:

FIGURE 8-7 Supplemental Software Dialog Box



1. **Click Next to accept the Typical settings, or select Custom to choose the options to install (see descriptions in** TABLE 8-1**).**

   Component installation wizards will guide you through the installation of each of the selected supplemental software components.

2. **Once the supplemental software has been installed, click Finish.**

3. **Click Yes at the System Setting Change dialog box to restart your system. If you ran the Sun Fire Installation Package software from the Tools and Drivers CD, remove it now.**

Proceed to the next section to learn more about Supplemental software.

Additional Information for Supplemental Software

This section lists additional information about Sun supplemental software for your server. This information includes:

- "Using the NVIDIA Network Access Manager for Windows Server 2003 (X4540 Server Only)" on page 56
- "Using the NVIDIA Network Control Panel for Windows Server 2008 (X4540 Server Only)" on page 60
- "Completing the IPMItool Installation" on page 62

Disk Control and Monitoring

Disk Control and Monitoring (DCM) is a multi-document application for the Sun Fire X4500 or X4540 server running Microsoft Windows Server 2003 R2 or Windows Server 2003 R2 SP2 operating system. DCM assists with drive insertion and removal, reports changes in disk configuration and, using the Microsoft IPMI system management driver, synchronizes the disk FRU (Field Replaceable Unit) information with information stored in the Sun Fire X4500 or X4540 server's Baseboard Management Controller (BMC, also known as the Service Processor).

For complete information on installing and using DCM, please refer to "Disk Control and Monitoring" on page 77.

Using Intel NIC Teaming (X4500 Server Only)

Intel® PROSet for Windows Device Manager is an extension to the Windows Device Manager. When you install the NIC Teaming supplemental software for your Sun Fire X4500 server, Intel PROSet software configuration tabs are automatically added to the network adapters listed in Device Manager.

Note – For information about identifying the active network connections on your server, refer to Appendix A, "Configure Windows Network Communication Settings With Multiple Network Interfaces" on page 149.

▼ To Access Intel NIC Teaming Configuration Settings

To access the functions available for your server's network interface, do the following:

1. **From the Taskbar, click Start, and then click Run.**

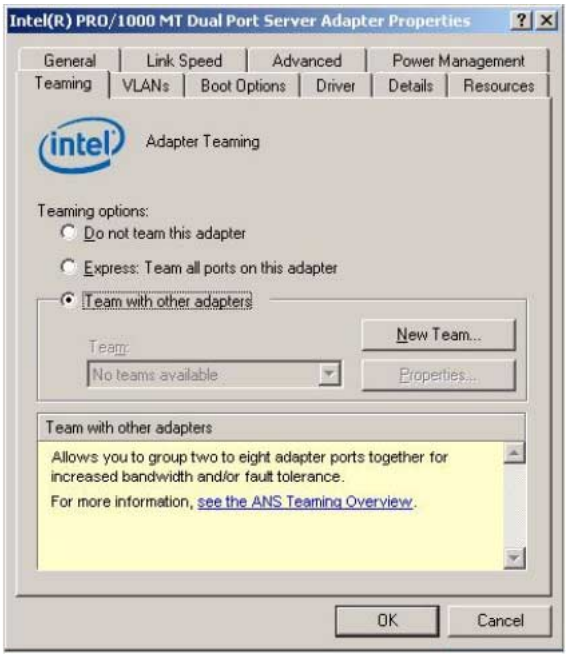
   The run dialog box is displayed.

2. **In the Open list, type** `devmgmt.msc`**, and then click OK.**

   The Device Manager dialog box is displayed.

3. **Expand the Network adapters group and select the first adapter.**
4. **Right-click the selection and click Properties.**
   The adapter properties dialog box is displayed.

FIGURE 8-8 Intel NIC Adapter Properties

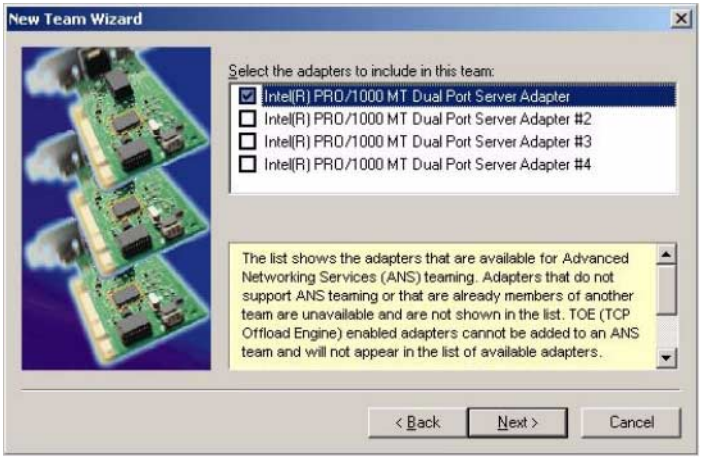


5. **To setup NIC teaming, click the Teaming tab.**
   The teaming options are displayed (see FIGURE 8-8).
6. **Select Team with other adapters and then click New Team.**
   The New Team Wizard is displayed.

FIGURE 8-9 New Team Wizard

7. Click Next. The Adapter Selection page is displayed.

FIGURE 8-10 Adapter Selection Page



8. Select the adapters to be included in the team from the list of installed adapters and then click Next.

The wizard will guide you through the configuration and setup of your team.

Learning More About Intel NIC Teaming

For more information on setting up NIC teaming for your environment, refer to the Intel Connectivity web page on "Advanced Networking Services—Teaming" at:

http://support.intel.com/support/network/sb/CS-009747.htm

Additionally, you may download the complete set of Intel Network Connections User Guides for your server's network adapters at:

http://support.intel.com/support/network/sb/cs-009715.htm

Using the NVIDIA Network Access Manager for Windows Server 2003 (X4540 Server Only)

If you elect to do a custom installation of Sun supplemental software, you can select NVIDIA Network Access Manager (NAM) to be installed on your Sun Fire X4540 server. When installed, you can use NAM features to optimize your server's network performance, increase its network bandwidth and provide for optimal throughput in case one of your network adapters stops functioning.

Note – For information about identifying the active network connections on your server, refer to Appendix A, "Configure Windows Network Communication Settings With Multiple Network Interfaces" on page 149.

The NVIDIA Network Access Manager software includes:

- **Ethernet setup**: This tool allows you to configure the settings for your NVIDIA integrated network interfaces to best conform to your network configuration.
- **Teaming**: This tool allows you to combine all the NVIDIA Ethernet interfaces on your system to form a team, resulting in increased bandwidth and network fail-over redundancy. In addition, you have the capability to configure TCP/IP acceleration that off-loads the processing of TCP/IP network traffic from your computer's CPU to its NVIDIA hardware resulting in greatly improved system performance.

Note – The TCP/IP Acceleration off loading policy is defined using the NVIDIA Network Access Manager (NAM). Its functionality is disabled by default. When TCP/IP acceleration is enabled, all TCP/IP connections will be off-loaded. If you have a software firewall installed on your system, enabling TCP/IP Acceleration technology may cause some network traffic to bypass your firewall. A warning message indicating this is displayed when a user enables TCP/IP acceleration.

- **FirstPacket**: This tool allows you to manage the traffic on your server and improve the performance of user-specified applications, such as networked games, Voice-over-IP (VoIP) and other applications that are sensitive to network delay (latency).

Note – You may not use both NVIDIA FirstPacket and NVIDIA Teaming together. You can only configure your server to use one or the other.

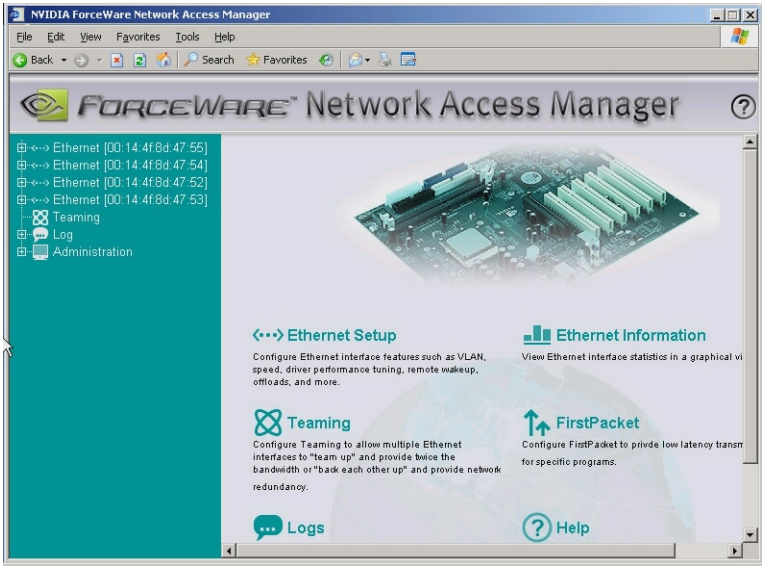
Launching the Network Access Manager

To access the functions available for your server's network interface, do the following at your server once NAM has been installed:

1. **From your Windows taskbar, click Start, and then click Programs.**
2. **Open the NVIDIA Corporation program group.**
3. **Click the Network Access Manager folder, and then click Web-based Interface**.

   At the web interface, see FIGURE 8-11, you can setup Ethernet settings and teaming for your NVIDIA integrated network interfaces using the wizards.

FIGURE 8-11 Windows Server 2003: Network Access Manager page



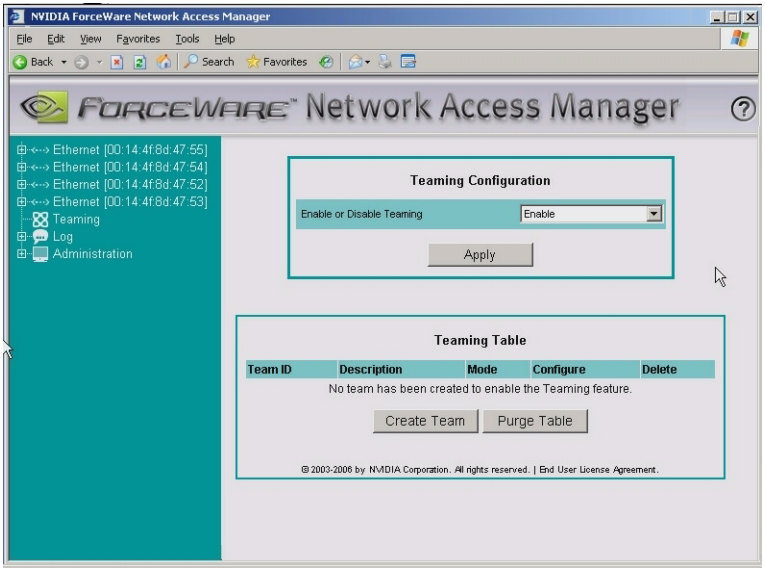
4. **For example, if you wanted to set up NIC teaming, you would click the Teaming link.**

   The Teaming wizard starts.

5. **Select Enable from the Teaming Configuration drop-down menu, and then click Apply. Refer to** FIGURE 8-12**.**

   You will see the unpopulated Teaming Table displayed.

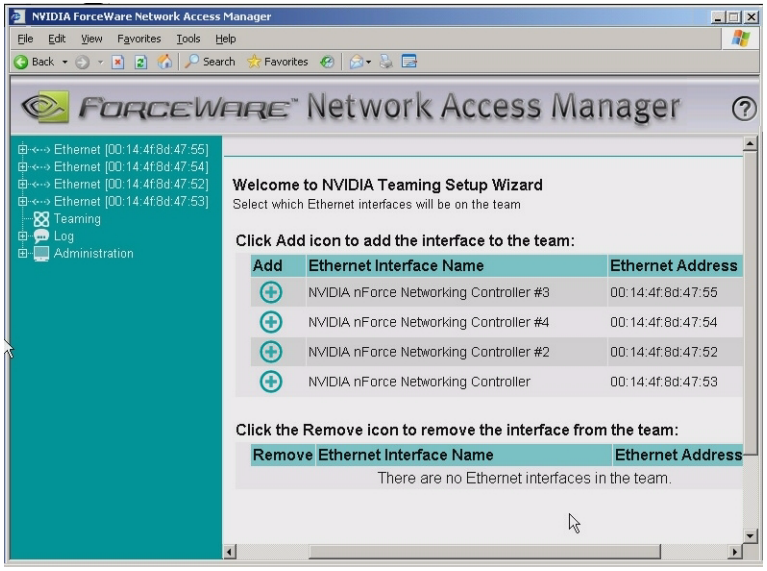
FIGURE 8-12 Teaming Wizard



6. **To select the network interfaces to team, and configure the teaming options, click the Create Team button.**

   The wizard will display the network interfaces available for teaming (see FIGURE 8-13).

FIGURE 8-13 Network Interface List



7. **From the available list of Ethernet Interface Names, add available interfaces to the team by clicking the Add icon. You can have two or more in a team.**

8. **After selecting the interfaces to be teamed, click the Next button (located at the bottom of the page).**

   The wizard will guide you through the configuration and setup of your team.

Note – Once you confirm the team to be created, the server's network interface and Network Access Manager will need to restart to configure the new settings.

Learning More About Network Access Manager

For more information about using NVIDIA networking options through either the web-based or CLI interface, refer to the documentation and online help installed with the product.

Using the NVIDIA Network Control Panel for Windows Server 2008 (X4540 Server Only)

If you elect to do a custom installation of Sun supplemental software, you can select NVIDIA Network Access Manager (NAM) to be installed on your Sun server. When installed, you can use NAM features to optimize your server's network performance, increase its network bandwidth and provide for optimal throughput in case one of your network adapters stops functioning. For Windows Server 2008, NVIDIA Ethernet settings are done through the NVIDIA Control Panel.

The NVIDIA Control Panel software is used to set up network interface **Teaming**. This tool allows you to combine all the NVIDIA Ethernet interfaces on your system to form a team, resulting in increased bandwidth and network fail-over redundancy.

Note – For information about identifying the active network connections on your server, refer to Appendix A, "Configure Windows Network Communication Settings With Multiple Network Interfaces" on page 149.

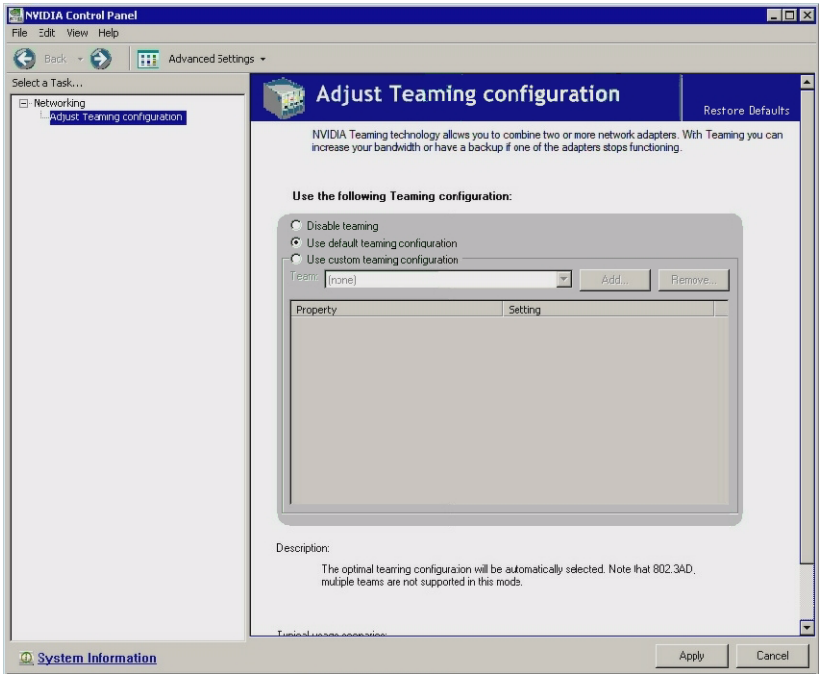
Launching the NVIDIA Control Panel

To access the functions available for your server's network interface, do the following at your server once NAM has been installed:

1. **From your Windows taskbar, click Start, and then click Programs.**
2. **Open the NVIDIA Corporation program group, click the NVIDIA Control Panel folder, and then click Control Panel**.

   You will be prompted to select the Standard or Advanced interface. You can setup teaming for two or more network interfaces. An example of the Advanced interface is shown in FIGURE 8-14.

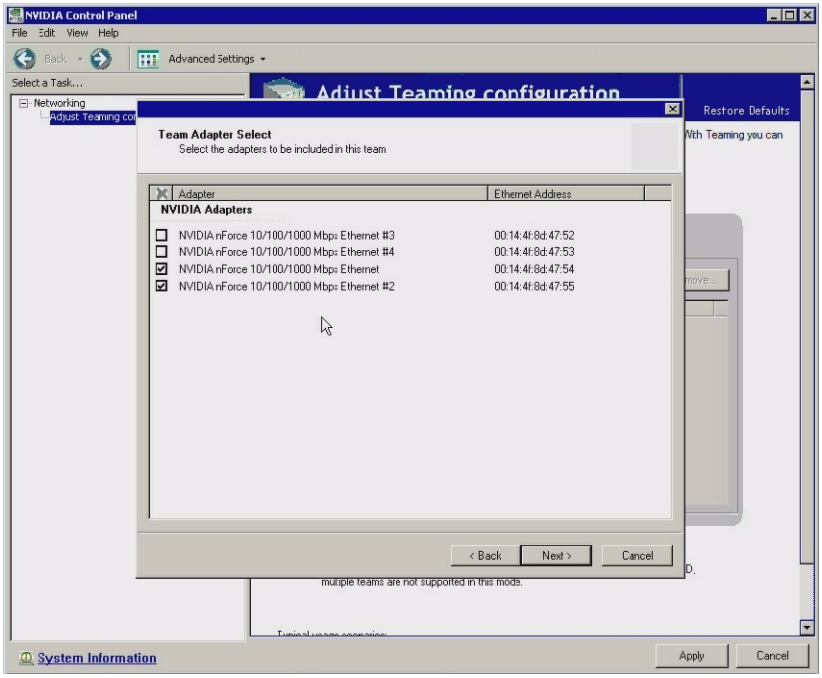
FIGURE 8-14 Windows Server 2008: NVIDIA Control Panel Networking Page



3. **For example, if you wanted to set up NIC teaming and select your on settings, instead of the using the optimal defaults, you would select Use Custom Teaming Configuration.**

   The Custom Teaming Configuration wizard starts and displays the network interfaces available for teaming (see FIGURE 8-15).

FIGURE 8-15 Ethernet Teaming List



4. **Select the network interfaces you wish to team, and then click**

   The wizard will guide you through the configuration and setup of your team.

Learning More About NVIDIA Control Panel

For more information about using NVIDIA networking options refer to the documentation and online help installed with the product.

Completing the IPMItool Installation

The IPMItool is a command line utility that reads the sensor data repository (SDR) and displays sensor values, System Event Log (SEL), Field Replaceable Unit (FRU) inventory information, gets and sets LAN configuration parameters, and performs chassis power control operations via the server's Service Processor. IPMItool is supplemental software and may be installed using the server's Tools and Drivers CD or using the `Installpack_x_x_x.exe` executable file (described earlier in this chapter).

Once installed, the IPMItool may be used to access your server's Service Processor (or another Sun server's Service Processor) in the following ways:

- Through the server's ILOM *(Integrated Lights Out Manager*) interface. For details on using ILOM, refer to your server's ILOM documentation.
- Through the server's Windows operating system. To use the IPMItool with Windows, it must be used in conjunction with the IPMI System Management driver (available with Windows Server 2003 R2 and R2 SP2, or as a Sun supplemental software component for supported Windows Server 2003 versions earlier than R2). To make sure you have what you need to use the IPMItool with Windows Server 2003 or Windows Server 2008, refer to the requirements listed below.

Note – The IPMI System Management driver is also required for using the **Disk Control and Monitoring (DCM)** software. Use the instructions listed here to ensure that the driver is properly installed.

Requirements

To use IPMItool, ensure that you have completed the requirements specified for your Windows Server version:

If you have a supported Windows Server 2003 version earlier than R2:

- Install the IPMItool as described in "To Install Supplemental Software" on page 51.
- Install the Sun IPMI System Management driver as described in "To Install Supplemental Software" on page 51.
- No configuration is required. IPMITool is ready for use.

For Windows Server 2003 R2 or R2 SP2:

- Install the IPMItool as described in "To Install Supplemental Software" on page 51.
- Install Microsoft's IPMI System Management driver in Windows Server 2003 R2 or R2 SP2.
- Configuration is required. Perform the steps described in "To Install Microsoft's IPMI System Management Driver (Windows Server 2003 R2 and R2 SP2)" on page 64.

For Windows Server 2008:

- Install IPMItool as described in "To Install Supplemental Software" on page 51.
- No configuration is required. IPMItool is ready for use.

▼ To Install Microsoft's IPMI System Management Driver (Windows Server 2003 R2 and R2 SP2)

Do the following before attempting to use the IPMItool through the Windows operating system:

1. **Install the Microsoft IPMI System Management driver:**

   a. **In Control Panel, open Add/Remove Programs.**

      The Add/Remove Programs dialog is displayed.

   b. **Click Add/Remove Windows Components.**

      The Windows Components Wizard dialog is displayed.

   c. **Highlight Management and Monitoring Tools component, and then click Details.**

      The Management and Monitoring Tools page is displayed.

   d. **Do one of the following:**

      - **If the Select the Hardware Management subcomponent check box is already selected, skip to** Step 2.
      - **If the Select the Hardware Management subcomponent check box is not selected, select it. The "3rd Party Drivers" warning dialog appears.**

   e. **Read the warning and then click OK.**

      The Management and Monitoring Tools page is displayed.

   f. **Click OK.**

      The Windows Components Wizard dialog is displayed.

   g. **Click Next.**

      The Hardware Management component is installed.

2. **Instantiate the IPMI System Management driver.**

3. **On the Taskbar, click Start, and then click Run.**

   The Run dialog box is displayed.

4. **In the Open list, type:**

   ```
   rundll32 ipmisetp.dll,AddTheDevice
   ```

   and then click OK.

   The IPMI System Management driver is instantiated.

5. **To ensure that the IPMI System Management driver is installed, repeat steps 1a through 1c, above.**

For information about using the IPMItool, refer to your *Sun Integrated Lights Out Manager 2.0 User's Guide* (820-1188). For more information on standard IPMItool commands, please see:

http://ipmitool.sourceforge.net/manpage.html

CHAPTER 9

Incorporating Sun Fire Drivers Into WIM or RIS Images

This chapter is intended for advanced system administrators who need to incorporate the server-specific drivers into a Windows Imaging Format (WIM) image or a Remote Installation Service (RIS) image.

WIM files are installed using Windows Deployment Services (WDS). RIS images can be deployed using either WDS in legacy mode or RIS.

This chapter is not a tutorial on WDS or RIS; it provides guidance on how to incorporate the server-specific drivers into a WIM or RIS image.

Determine Required Drivers

The server-specific drivers that must be incorporated into a WIM or RIS image are shown in TABLE 9-1.

TABLE 9-1 Server-specific Drivers Required for WIM or RIS Images

		Incorporate for Windows Server 2003 (X4500 or X4540)		Incorporate for Windows Server 2008 (X4540 only)	
Server Support	**Driver/Device**	**32-bit**	**64-bit**	**32-bit**	**64-bit**
X4500 and X4540	AMD-8132 HyperTransport IOAPIC Controller	Yes	Yes	No	No
X4500 ONLY	AMD-8111 High Precision Event Timer	Yes	No	n/a	n/a
X4500 ONLY	AMD-8131 HyperTransport PCI-X Tunnel	Yes	No	n/a	n/a
X4500 and X4540	AMD K8 Processor	Yes	Yes	No	No
X4500 and X4540	AMI Virtual Floppy	Yes	Yes	Yes	Yes
X4500 ONLY	Marvell SATA integrated disk controller	Yes	Yes	n/a	n/a
X4540 ONLY	LSI Logic Fusion-MPT integrated disk controller	Yes	Yes	Yes	Yes
X4540 ONLY	NVIDIA nForce PCI System Management	Yes	Yes	No	No
X4540 ONLY	NVIDIA nForce4 HyperTransport Bridge	Yes	Yes	No	No
X4540 ONLY	NVIDIA nForce4 Low Pin Count Controller	Yes	No	No	No

Add Drivers to a WIM Image for the Sun Fire X4540 Server

For remote installation of Windows Server 2008 using a server running Windows Deployment Services, the LSI integrated disk controller driver provided with Windows Server 2008 is sufficient to install the operating system.

Before you Begin

Before creating a WIM image, you need to do the following:

- The Windows Automated Installation Kit (Windows AIK or WAIK) must be installed. The kit can be downloaded from Microsoft. Sun recommends using version 2.0 or later of the WAIK.
- Read the Windows AIK documentation.
- Windows Remote Installation Services must be are running on a Windows Server. Read the Windows Deployment Services snap-in documentation.
- Locate `DriverPack.zip` for Windows Server 2008.

▼ To Add Drivers to the WIM Image

1. **Extract the contents of Windows Server 2008** `DriverPack.zip` **to a network share (for example: ***yourshare******share*****`DriverPack`**), making sure to maintain the directory structure.**

2. **Select the service image to update and export the image.**

   a. **Click Start, click Administrative Tools, and then click Windows Deployment Services.**

   b. **Find the image to service. Right-click the image and then click Disable.**

   c. **Right-click the image and click Export Image. Follow the Wizard directions to export the image to the location of your choice.**

3. **Mount the Windows image you just exported. For example,**

   ```
   imagex /mountrw C:\windows_distribution\sources\install.wim 1
   C:\win_mount
   ```

   The first Windows image in the `Install.wim` file is mounted to `C:\wim_mount`

4. **Use Windows System Image Manager (Windows SIM, available in Windows AIK) to create an answer file that contains the paths to the device drivers that you intend to install. See the Microsoft documentation for the Windows Automated Installation Kit for the details of starting the Windows SIM application.**

5. **Add the** `Microsoft-Windows-PnpCustomizationsNonWinPE` **component to your answer file in the** `offlineServicing` **pass.**

6. **Expand the** `Microsoft-Windows-PnpCustomizationsNonWinPE` **node in the answer file. Right-click** `DevicePaths`**, and then select Insert New PathAndCredentials.**

   A new PathAndCredentials list item appears.

7. **In the** `Microsoft-Windows-PnpCustomizationsNonWinPE` **component, specify the path to the architecture folder in the DriverPack folder on the network share, and the credentials used to access the network share.**

   For example, the path and credentials for a 64-bit image might be:

   <Path>*yourshare**share*\DriverPack\amd64</Path>

   <Credentials>

   <Domain>*MyDomain*</Domain>

   <Username>*MyUserName*</Username>

   <Password>*MyPassword*</Password>

   </Credentials>

8. **Save the answer file and exit Windows SIM. The answer file must be similar tothe following sample. The sample assumes the architecture is 64-bit.**

```
<?xml version="1.0" ?>
<unattend xmlns="urn:schemas-microsoft-com:asm.v3" xmlns:wcm=
"http://schemas.microsoft.com/WMIConfig/2002/State">
   <settings pass="offlineServicing">
      <component name="Microsoft-Windows-PnpCustomizationsNonWinPE"
processorArchitecture="amd64" publicKeyToken="31bf3856ad364e35"
language="neutral" versionScope="nonSxS">
         <DriverPaths>
            <PathAndCredentials wcm:keyValue="1">
               <Path>>\\yourshare\share\DriverPack\amd64</Path>
               <Credentials>
                  <Domain>MyDomain</Domain>
                  <Username>MyUserName</Username>
                  <Password>MyPassword</Password>
               </Credentials>
            </PathAndCredentials>
         </DriverPaths>
      </component>
   </settings>
</unattend>
```

9. **Use Package Manager to apply the unattended installation answer file to the mounted Windows image. Specify a location for the log file to create. For more information about using Package Manager, see the Microsoft Windows AIK documentation. For example,**

   ```
   pkgmgr /o:"C:\wim_mount\;C:\wim_mount\Windows" /n:"C:\
   unattend.xml" /l:"C:\pkgmgrlogs\logfile.txt"
   ```

   The `.inf` files referenced in the path in the answer file are added to the Windows image. A log file is created in the directory `C:\Pkgmgrlogs\`.

10. **Review the contents of the `%WINDIR%\Inf\` directory in the mounted Windows image to ensure that the `.inf` files were installed. Drivers added to the Windows image are named `oem*.inf`. This is to ensure unique naming for new drivers added to the computer. For example, the files `MyDriver1.inf` and `MyDriver2.inf` are renamed `oem0.inf` and `oem1.inf`.**

11. **Unmount the `.wim` file and commit the changes. For example:**

    ```
    imagex /unmount /commit C:\wim_mount
    ```

12. **Replace the service image and Enable the image.**

    a. **If the Windows Deployment Services snap-in is not running, click Start, click Administrative Tools, and then click Windows Deployment Services.**

    b. **Find the image to service. Right-click the image and then click Replace Image. Follow the Wizard directions to replace the service image with the Windows image that was updated.**

    c. **Right-click the service image and then click Enable.**

    The service image is now available and all the server-specific drivers are added to the image.

Add Drivers to the RIS Image for the Sun Fire X4500 Server

The following procedure describes one method of incorporating the drivers into a RIS image.

Before You Begin

Before creating a RIS image, you need to do the following:

- Windows Remote Installation Services must be are running on a Windows Server. Read the Windows Remote Installation Services documentation for more information.
- Locate `DriverPack.zip` for Windows Server 2003. For more information, see Downloading Server-Specific Driver Packages.

▼ To Add Drivers to the RIS Image

In the following procedure, `RemoteInstall\Setup\`*Language*`\Images\`*Dir_name*`\`*Arch* refers to the image located on the RIS server where the drivers will be added.

- *Language* is the language of the installed operating system (English, for example)
- *Dir_name* is the directory where the RIS image installed.
- *Arch* is either i386 or amd64 for the 32-bit or 64-bit images respectively.

To add drivers to the RIS image:

1. **At the same level as the** `RemoteInstall\Setup\`*Language*`\Images\`*Dir_name*`\`*Arch* **folder on the RIS image, create a** `$OEM$` **folder.**
2. **In the** `$OEM$` **folder, create a** `$1\Sun\Drivers` **folder.**
3. **Extract the contents of** `DriverPack.zip` **to a temporary location, making sure to maintain the directory structure.**
4. **Copy the** `$OEM$\$1\Sun\Drivers\mrvl\mvsata.sys` **file to the** `RemoteInstall\Setup\`*Language*`\Images\`*Dir_name*`\`*Arch* **folder.**
5. **Add the following text into the** `RemoteInstall\Setup\`*Language*`\Images\`*Dir_name*`\`*Arch*`\txtsetup.sif` **file, at the end of the visible text.**

```
[SourceDisksFiles]
mvsata.sys = 1,,,,,,3_,4,1

HardwareIdsDatabase]
PCI\VEN_11ab&DEV_6041 = "mvsata"
PCI\VEN_11ab&DEV_6081 = "mvsata"
PCI\VEN_1000&DEV_6042 = "mvsata"

[SCSI.load]
mvsata = mvsata.sys,4

[SCSI]
mvsata = "Marvell Serial ATA Gen 2 PCI-X Adapter(Server 2003
32-bit)"
```

6. **Make the following changes to the `.sif` file that is used for installation.**

   For readability, the OemPnpDriversPath information has been shown on multiple lines. The information must be entered on a single line.

TABLE 9-2 Sun Fire X4500 Server .sif File Changes

Windows Server 2003 32-bit	Windows Server 2003 64-bit

`[Unattended]`
`OemPreinstall = yes`
 	
`OemPnpDriversPath="\Sun\Drivers\`
`amd\cpu;\Sun\Drivers\amd\8131\`
`ioapic;\Sun\Drivers\amd\8111\`
`hpet;\Sun\Drivers\ati;\Sun\`
`Drivers\mrvl;\Sun\Drivers\ami"`
	`[Unattended]`
	`OemPreinstall = yes`
	
	`OemPnpDriversPath="\Sun\Drivers\`
	`amd\cpu;\Sun\Drivers\amd\8132\`
	`ioapic;\Sun\Drivers\mrvl;\Sun\`
	`Drivers\ami"`

7. **Stop and start the Remote Installation Service (BINLSVC) on the RIS server. To do this, type the following commands at the command prompt and press Enter after each command:**

   > **`net stop binlsvc`**
   > **`net start binlsvc`**

Adding Drivers to the RIS Image for the Sun Fire X4540 Server

For remote installation of Windows Server 2003 using a server running Windows Remote Installation Services, the LSI integrated disk controller driver provided with Windows Server 2003 is not sufficient to install the operating system. Sun recommends updating the RIS image with the LSI integrated disk controller driver available with `DriverPack.zip`.

Before you Begin

Before creating a RIS image, you need to do the following:

- Windows Remote Installation Services must be are running on a Windows Server. Read the Windows Remote Installation Services documentation for more information.
- Locate `DriverPack.zip` for Windows Server 2003. For more information, see Downloading Server-Specific Driver Packages.

▼ To Add Drivers to the RIS Image

In the following procedure, `%RIS_Image%` refers to the root of your Windows image on the RIS server.

1. **Create the following directories in RIS_Image (root of your Windows image on the RIS server.):**
   - `$OEM$\textmode`
   - `$OEM$\$1\Sun\Drivers`
2. **Extract the contents of `DriverPack.zip` to a temporary location, making sure to maintain the directory structure.**
3. **Update the RIS_Image with the platform-specific drivers:**
   - **For 32-bit, copy the contents of the `DriverPack\i386` folder to the `%RIS_Image%\$OEM$\$1\Sun\Drivers` folder, making sure to maintain the directory structure.**
   - **For 64-bit, copy the contents of the `DriverPack\amd64` folder to the `%RIS_Image%\$OEM$\$1\Sun\drivers` folder, making sure to maintain the directory structure.**
4. **Copy the contents of the `%RIS_Image%\$OEM$\$1\Sun\Drivers\lsi` folder to the `%RIS_Image%\$OEM$\textmode` folder. (After copying the contents, you can delete the `%RIS_Image%\$OEM$\$1\Sun\Drivers\lsi` folder).**
5. **Copy the contents of the `%RIS_Image%\$OEM$\$1\Sun\Drivers\RIS` folder to the `%RIS_Image%\$OEM$\textmode` folder. (After copying the contents, you can delete the `%RIS_Image%\$OEM$\$1\Sun\Drivers\RIS` folder).**
6. **Create an answer file using the method described in the Microsoft TechNet article *"Creating an Answer File with Setup Manager"*. The article can be found at:**

   http://technet2.microsoft.com/WindowsServer/en/library/78421630-6fcc-4604-a888-bd9c84244a5b1033.mspx

7. **Make the changes listed in** TABLE 9-3 **to the** `.sif` **file that is used for installation.**

   For readability, the OemPnpDriversPath information has been shown on multiple lines. The information must be entered on a single line.

TABLE 9-3 Sun Fire X4540 `.sif` File Entries

Windows Server 2003 32-bit	Windows Server 2003 64-bit

`[Unattended]`
`OemPreinstall = yes`
 	
`OemPnpDriversPath="\Sun\Drivers\`
`amd\cpu;\Sun\Drivers\ast;\Sun\`
`Drivers\nvidia\smbus;\Sun\Drivers\`
`nvidia\ethernet"`
 	
`[MassStorageDrivers]`
`"LSI Logic Fusion-MPT SAS Driver`
`(32-bit)" = OEM`
 	
`[OEMBootFiles]`
`lsi_sas.inf`
`lsi_sas.sys`
`lsinodrv.inf`
`s2k332.cat`
`txtsetup.oem`
	`[Unattended]`
	`OemPreinstall = yes`
	
	`OemPnpDriversPath="\Sun\Drivers\`
	`amd\cpu;\Sun\Drivers\ast;\Sun\`
	`Drivers\nvidia\smbus;\Sun\Drivers\`
	`nvidia\ethernet"`
	
	`[MassStorageDrivers]`
	`"LSI Logic Fusion-MPT SAS Driver`
	`(64-bit)" = OEM`
	
	`[OEMBootFiles]`
	`lsi_sas.inf`
	`lsi_sas.sys`
	`lsinodrv.inf`
	`s2k3am64.cat`
	`txtsetup.oem`

8. **Stop and start the Remote Installation Service (BINLSVC) on the RIS server.**

   To do this, type the following commands at the command prompt and press `Enter` after each command:

   ```
   net stop binlsvc
   net start binlsvc
   ```

CHAPTER 10

Disk Control and Monitoring

This chapter describes the Disk Control and Monitoring (DCM) application for the Sun Fire X4500 or X4540 server running Microsoft Windows Server 2003 R2 or R2 SP2.

Note – DCM is not currently supported for use with Windows Server 2008.

Information about DCM is described in the following sections:

Overview

DCM is a multi-document application for the Sun Fire X4500 or X4540 server running Microsoft Windows Server 2003 R2 and R2 SP2 operating system. DCM assists with drive insertion and removal, reports changes in disk configuration and, using the Microsoft IPMI system management driver, synchronizes the disk FRU (Field Replaceable Unit) information with information stored in the Sun Fire X4500 or X4540 server's Baseboard Management Controller (BMC, also known as the Service Processor).

Installation

Before you can begin, DCM and its supporting software must be installed on your server. You will need to perform the following tasks if they have not already been done:

- Install the Microsoft .NET Framework Version 2.0 Redistributable Package, as described in "Pre-installation Requirements for Disk Control and Monitoring" on page 44.
- Run the supplemental software installation utility. Supplemental software is installed as part of a "typical" installation by the Sun `InstallPack.exe` utility (downloadable from the Sun web site), or the latest Tools and Drivers CD for your server (also available from the Sun web site). See "Updating the Server-Specific Drivers" on page 45.
- Complete the installation of the IPMI System Management driver (Windows Server 2003 R2 or R2 SP2 only), as described in "Completing the IPMItool Installation" on page 62.
- During the supplemental software installation, the DCM Remote Script installer called `DCMRemoteSetup1.1.1.msi` will be installed on the Windows desktop (part of the Disk Monitoring and Control supplemental software installation). To use the DCM remote client features, proceed to "Installing the DCM Remote Client" on page 105 to install the DCM Remote Scripts.

Starting DCM

To start the DCM application, double-click the Disk Control and Monitoring icon on the Windows desktop.

DCM consists of two documents, the Disk View document (default document) and the Volume View document. shows an example of the Disk View for the X4500 server, shows an example of Disk View for the X4540 server.

FIGURE 10-1 Example DCM Disk View Document for the X4500 Server

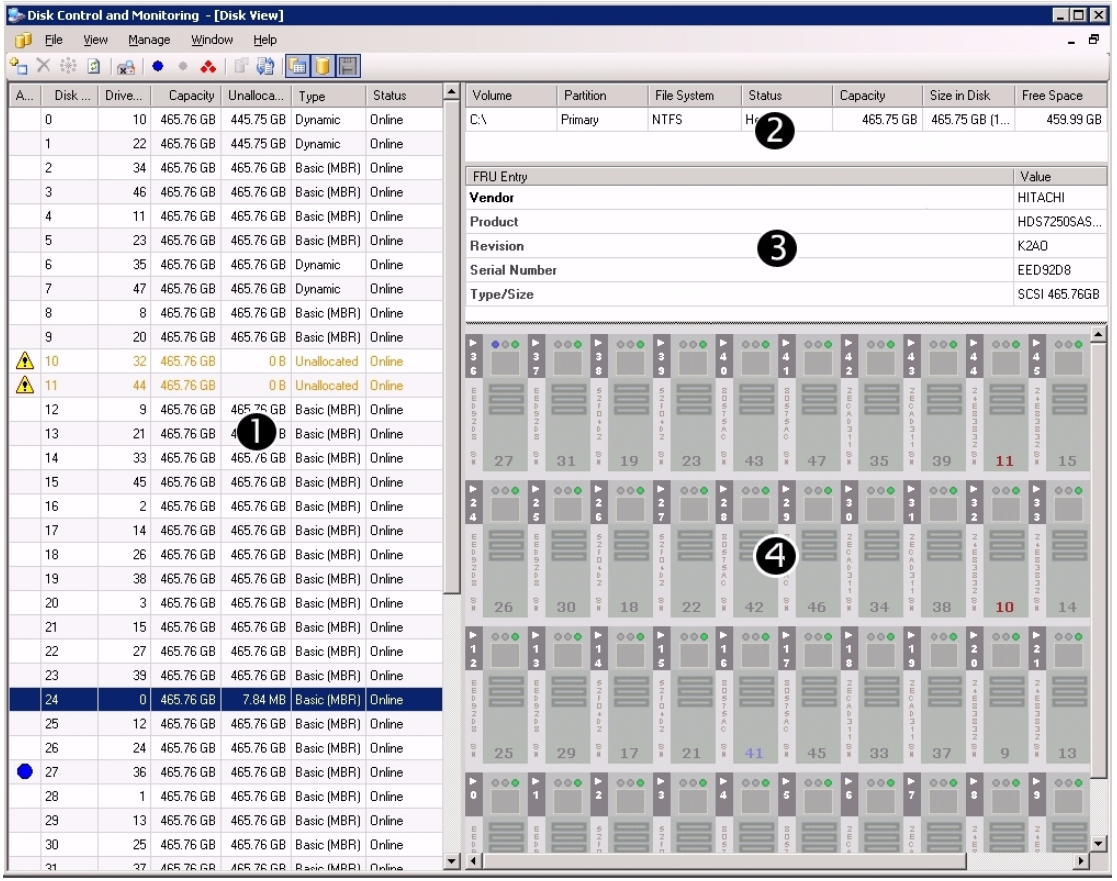


Illustration #	Description
1	Disk Pane
2	Volume Pane
3	FRU Pane
4	Disk Map Pane

Note – The Drive Map Pane feature is only available for the Sun Fire X4500 server. It is not available for the Sun Fire X4540 server.

FIGURE 10-2 Example DCM Disk View Document for the X4540 Server

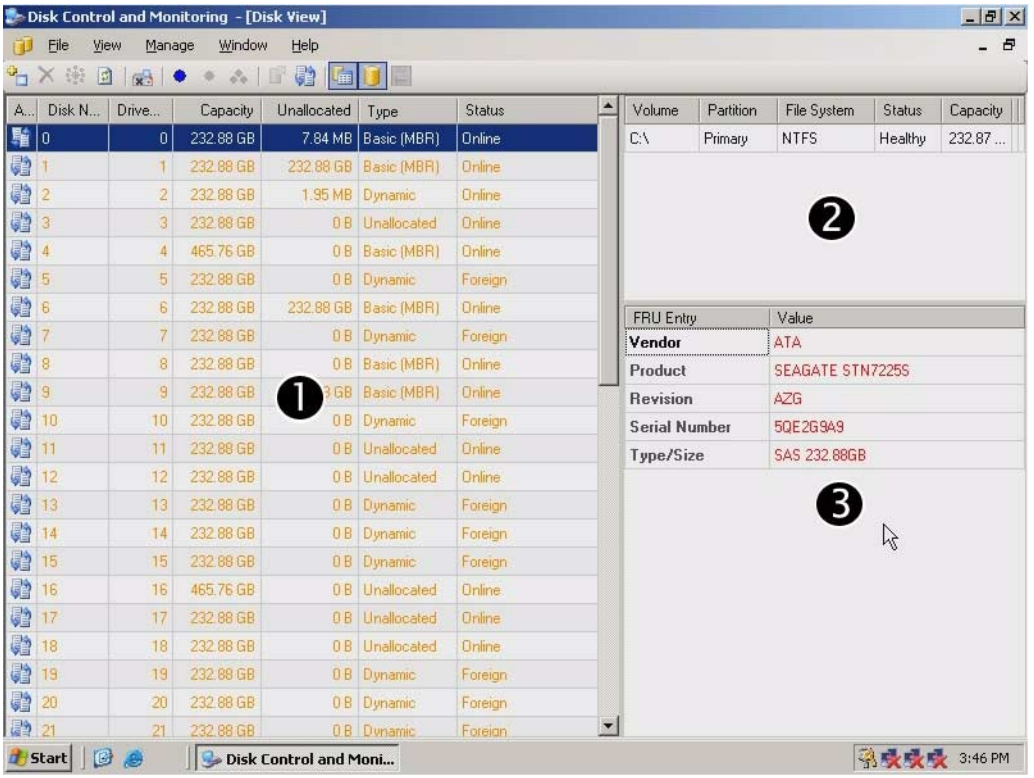


Illustration #	Description
1	Disk Pane
2	Volume Pane
3	FRU Pane

Viewing Information

DCM provides configuration and status information about the Sun Fire X4500 or X4540 server's hard disks. The DCM Disk View Document is made up of four panes: Disk, Volume, FRU and Drive Map. The tables below describe each pane in detail. See "Icons Used in DCM" on page 82 for details on icons associated with DCM commands.

TABLE 10-1 Disk Pane

Column	Description
Alerts (unlabeled column)	Shows icon alerts associated to a disk: No icon - Normal working operation. Warning – This icon will be displayed if the disk is seen as Foreign, Not ready, or No media. Error – This icon will be displayed if the disk is seen as Failed, Missing, or Unknown. Sync FRU – This icon will be displayed if the disk FRU information in DCM is not synchronized with information in the Baseboard Management Controller (BMC or Service Processor).
Disk Number	The Windows drive number.
DriveBay/Slot	The physical disk drive number.
Capacity	Formatted capacity of the disk.
Unallocated	Free disk space not assigned to any volume.
Type	There are two types of disks: • Basic – Basic disks use the basic partition scheme and contain basic volumes (primary partitions and extended partitions with logical drives). Basic disks use the Master Boot Record (MBR) partition style which was created for x86 systems and is backwards compatible with earlier versions of Windows. • Dynamic – Dynamic disks support dynamic volumes and include support for combining disks (using simple, spanned, and striped volumes) and fault tolerant volumes (using mirrored and RAID-5 volumes).
Status	Possible status for disks: • Online – The disk is accessible and healthy. • Not Initialized – The disk is unallocated and does not contain a partition. • Not Ready – The disk is not ready for use. • Foreign – The foreign status applies to disks that were once part of a volume, but disconnected and reconnected. • Failed – The disk is not readable and may be bad due to an error. • Missing – This status message indicates a dynamic disk is corrupted, turned off, or removed. • Unknown – Failed to obtain any disk properties.

TABLE 10-2 Volume Pane

Column	Description
Volume	The volume drive letter (e.g., `D:\`).
Partition	Identifies the primary boot device. (Boot drive only.)
Type	The volume types: • For Basic disks - Primary or Extended. • For Dynamic disks - Mirrored, RAID5, Simple, Spanned or Striped.
File System	File system on a volume (FAT32 or NTFS).
Status	Current state of a drive, such as formatting or healthy.
Capacity	Formatted capacity of a volume.
Size in Disk	The volume size on a disk.
Free Space	Unused volume space.
Fault Tolerance	Is displayed if the volume is fault tolerant. The values are: “Yes” or “No”.

Icons Used in DCM

TABLE 10-3 FRU Pane

Column	Description
FRU Entry	The various entries captured from the disk FRU (Field Replaceable Unit) information stored in the server’s Baseboard Management Controller (BMC or Service Processor).
Value	• Vendor - Drive manufacturer. • Product - The product identification string. • Revision - The firmware version number. • Serial number. • Type/Size - The disk’s interface and unformatted capacity.

TABLE 10-4 Drive Map Pane—Available for X4500 Servers ONLY

Column	Description
Drive Base Slot number	The upper, left hand white number
Serial Number	In left hand gray bar
LED Status	• Green light - drive OK • Blue light - drive location • Yellow light - drive error
Disk Number	Windows number
Dynamic Disk Type	Blue font - DDT
Basic Disk Type	Gray font - BDT
Uninitialized Drive	Red font - UD

The following section lists the icons used in DCM.

TABLE 10-5 Icons Used In DCM

Icon	Meaning
	The Warning icon is displayed if the disk status is Foreign, Not Ready, Unallocated or No media.
	The Error icon is displayed if the disk status is Failed, Missing or Unknown.
	The SyncFru icon is displayed if the BMC FRU and Disk FRU are not synchronized.
	The Add Disk icon is used to add a disk to a volume.
	The Remove icon is used to remove a disk from a volume.
	The Reactivate Disk returns a disk to a volume.
	The Rescan icon refreshes the Disk View document with the current state of the BMC.
	The Warning and Locate icon is displayed a warning if there is a possible disk problem.
	The Locate icon is displayed when a drive location is enabled.
	The Error and Locate icon is displayed when there is a possible disk problem.
	The Remove Preview icon is displayed the volumes and disk drives to be removed.
	The View Volume Information icon is displayed the Volume document.
	The SyncFRU icon synchronizes a FRU with the BMC.
	The View Slot (or Drive Map) icon toggles viewing of the Drive Map.
	The Create Volume icon creates Dynamic volumes.

TABLE 10-5 Icons Used In DCM

Icon	Meaning
	The Disk icon is displayed the Disk View document.
	Locate Disk - Turns on a disk's blue LED.
	Stop Locate Disk - Turns off a disk's blue LED.
	Stop Locate All - Turns off all disk's blue LEDs.

Menus and Toolbars

Performing DCM operations are done using commands in the menu bar and toolbar as illustrated below.

FIGURE 10-3 DCM Menu Bar and Toolbar

You can navigate back and forth from the View menu and see the panels in each Disk and Volume View document.

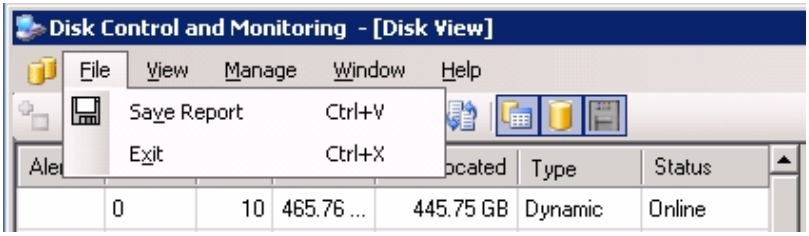
Disk View Commands

This section describes the commands in the Disk View document.

File Menu

The File Menu includes the Save Report and Exit commands.

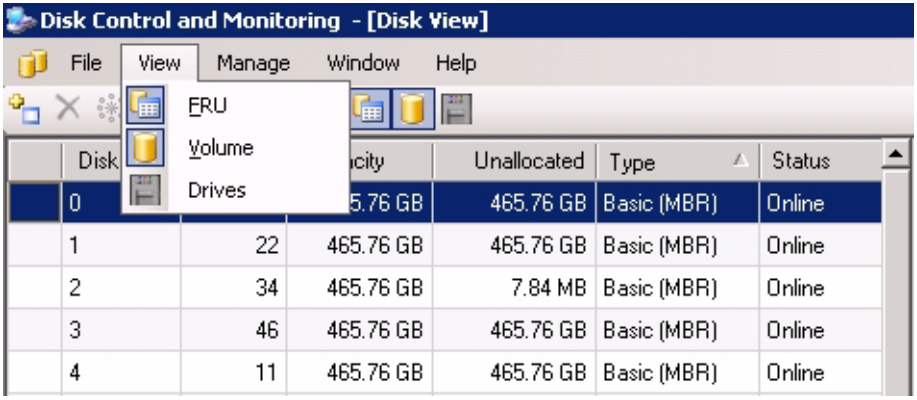
FIGURE 10-4 Disk View File Menu



View Menu

The View menu includes FRU, Volume, and Drive commands.

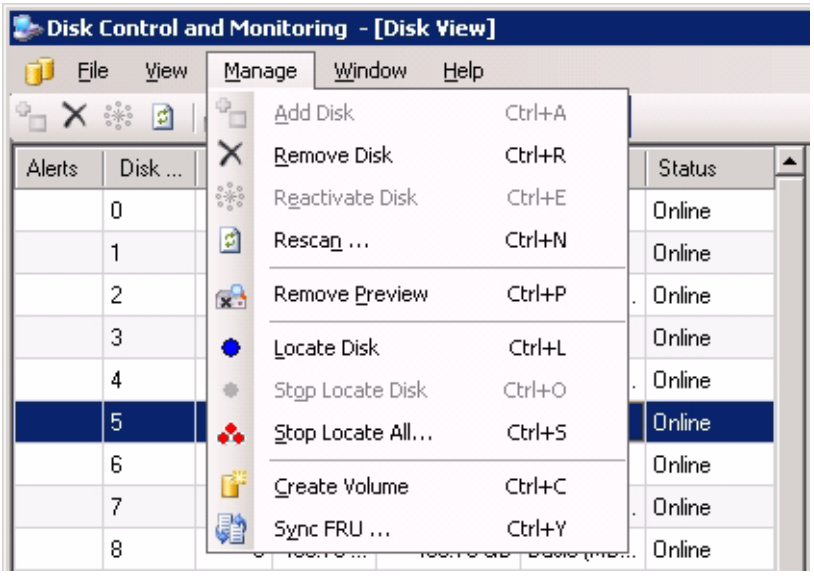
FIGURE 10-5 View Menu



Manage Menu

The Disk View Manage menu includes the following commands:

FIGURE 10-6 Disk View Manage Menu



These commands are explained further below:

- "Add Disk" on page 89
- "Remove Disk" on page 89
- "Reactivate Disk" on page 90
- "Rescan" on page 91
- "Remove Preview" on page 91
- "Locate Disk" on page 92
- "Stop Locate Disk" on page 92
- "Stop Locate All" on page 93
- "Create Volume" on page 94
- "Sync FRU" on page 95
- "Right-Click Disk View Manage Menu" on page 96

Add Disk

This command is used to add unused or unallocated disks to a volume. The Add Disk command changes a Basic disk to a Dynamic disk.

1. Select a disk to be added.
2. Click the **Add Disk** command.

   DCM performs the following actions:

   - Updates the Disk pane type and converts a Basic disk to a Dynamic disk.
   - Automatically rescans and updates disk configuration information.

Remove Disk

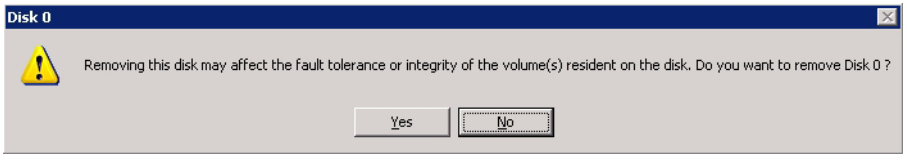
This command is used to remove a Dynamic disk from a volume. The Remove Disk command changes a Dynamic disk to a Basic disk.

Caution – The Remove Disk command deletes the volume(s) on the selected disk. Do not perform this action on disks with data you want to keep because the data will be lost. If you are removing a RAID disk, refer to "Removing a Disk That is Part of a RAID Volume" on page 90.

1. Select the Dynamic disk to be removed.
2. Click the **Remove Disk** command.

   If you are removing a disk that contains fault-tolerant volumes, DCM warns you with the following dialog box.

FIGURE 10-7 Remove Disk Dialog Box



Caution – If you receive this warning, do not proceed unless you are sure your data is backed-up, or you no longer need it. Proceeding with this remove command will make any fault-tolerant volumes using this disk inaccessible.

DCM performs the following actions:

- Updates the Disk pane, converts a Dynamic disk to a Basic disk and deletes all data on the disk.
- Automatically rescans and updates disk configuration information.

Removing a Disk That is Part of a RAID Volume

To remove a disk that is part of a RAID volume, you can use one of the following procedures:

- Uncontrolled removal:

  Physically hot-remove the hard disk drive. When using this method, both the system software and Windows RAID will recognize that the disk has been removed.

- Controlled removal of a disk using Windows Disk Manager:

  a. Start Windows Disk Manager.

  b. Select the hard disk drive in RAID volume to remove.

  c. Right-click the drive and select offline.

  d. Remove the disk from the system.

For a Sun Fire X4500 or X4540 server running Windows Server 2003, RAID disk volumes are configured and managed by Windows Disk Manager. For additional information about Windows Disk Manager, go to the following URLs:

http://support.microsoft.com/kb/816307

http://technet2.microsoft.com/WindowsServer/en/library/2c4910c6-1b83-40e5-810a-023993aa8b941033.mspx

Reactivate Disk

The Reactivate disk command adds a disk back to the fault tolerant volume.

1. Remove a disk from a fault tolerant volume.
2. Reinsert the disk.
3. Select the reinserted disk.
4. Click the **Reactivate Disk** command.

DCM performs the following actions:

- Updates the Disk Volume and Drive Map panes.
- Automatically rescans and updates the disk configuration.

Rescan

Rescan allows you to scan for updated disk configurations such as added or removed disks.

- **Click the Rescan command to start the process.**

DCM performs the following actions:

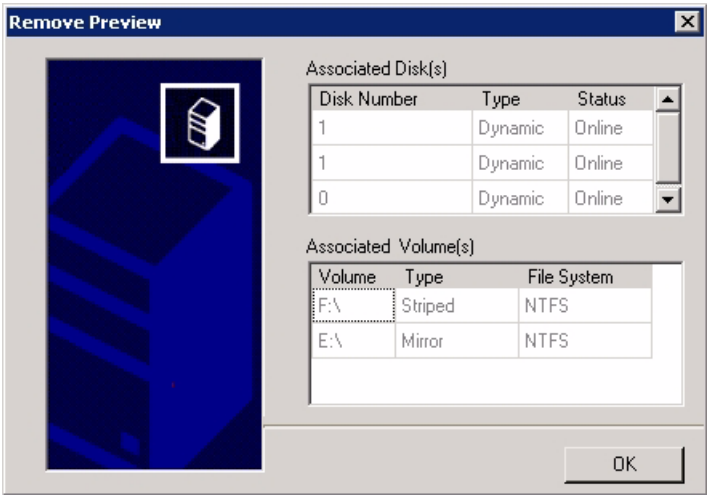
- Updates the Disk Volume and Drive Map panes.
- Automatically rescans and updates the disk configuration.

Remove Preview

Remove Preview shows disk drives and their associated volumes that would be affected if a disk were removed.

- **Click the Remove Preview command.**

FIGURE 10-8 Remove Preview



Locate Disk

Turns on the blue LED that physically locates a disk drive in the server's drive bay and the Drive Map pane.

1. Select a disk to be located.
2. Click the **Locate Disk** command.

DCM performs the following actions:

- Updates the Disk pane and Drive Map pane.
- Automatically rescans and updates disk configuration information.

Stop Locate Disk

Turns off the blue LED that physically locates a disk drive in the server's drive bay and the Drive Map pane.

1. Select a disk to be stopped.
2. Click the **Stop Locate Disk** command.

DCM performs the following actions:

- Updates the Disk pane and Drive Map pane.
- Automatically rescans and updates disk configuration information.

Stop Locate All

Turns off all blue LEDs that physically locate all disk drives in the server's drive bay and the Drive Map pane.

- **Click the Stop Locate Disk command.**

DCM performs the following actions:

- Updates the Disk pane and Drive Map pane.
- Automatically rescans and updates disk configuration information.

Create Volume

The Create Volume command starts a Wizard that creates volumes on Dynamic disks.

1. Select a Dynamic disk.
2. Click the **Create Volume** command.

FIGURE 10-9 Create Volume Wizard Welcome

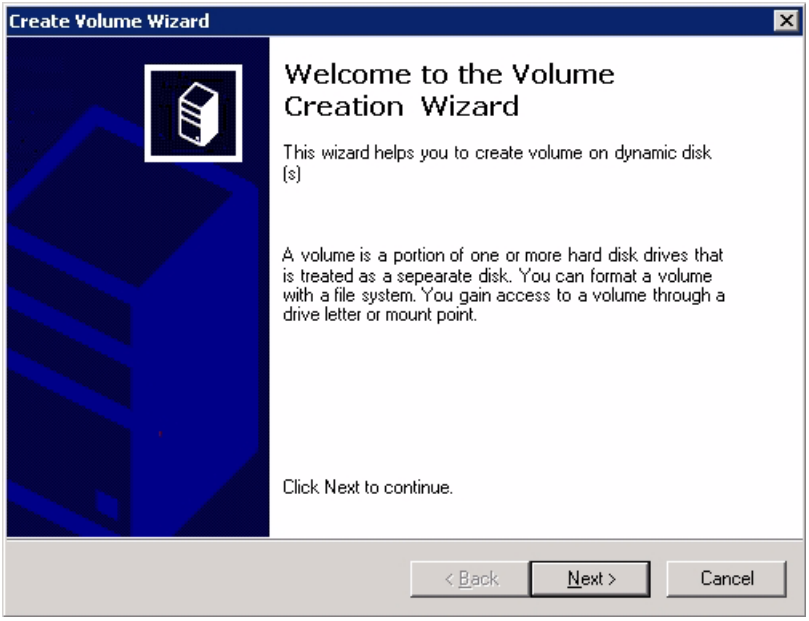
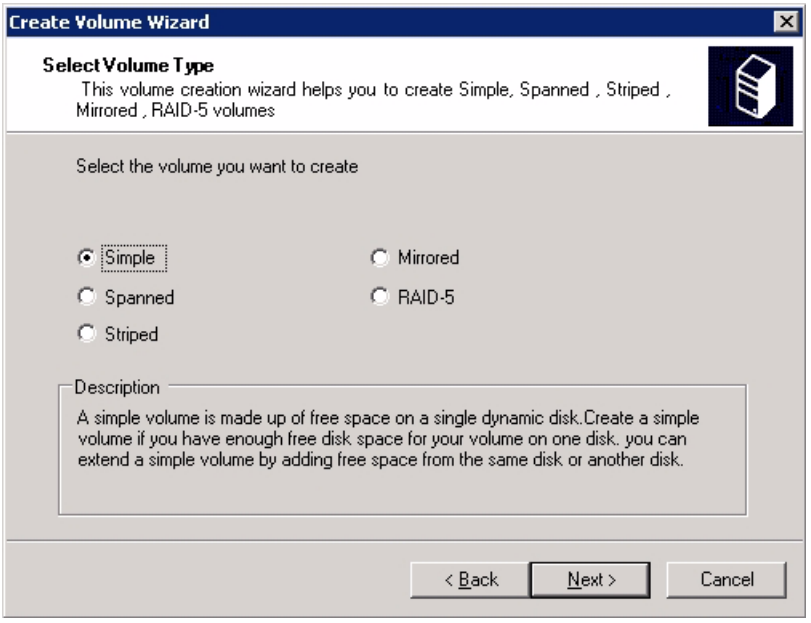


FIGURE 10-10 Create Volume Wizard - Select Volume Type



3. Select the Volume Type you want to create.
   - Simple volumes are not fault tolerant.
   - Mirrored volumes are fault tolerant and use RAID-1, or RAID-5 which provides redundancy by creating two identical copies of a volume.
   - Striped volumes are not fault tolerant.
   - Spanned volumes are not fault tolerant.

Sync FRU

The Sync FRU command synchronizes the selected disk information with the IPMI FRU.

1. Select a disk.
2. Click the **Sync FRU** command.

DCM performs the following actions:

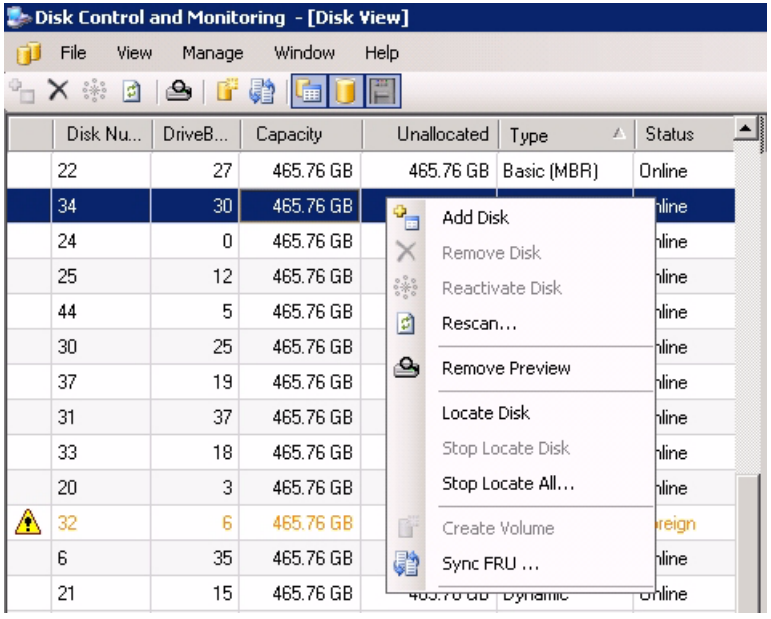
- Updates the Disk pane and Drive Map pane.

- Automatically rescans and updates disk configuration information.

Right-Click Disk View Manage Menu

You can also right-click on a selected disk to invoke the Manage menu items as illustrated below.

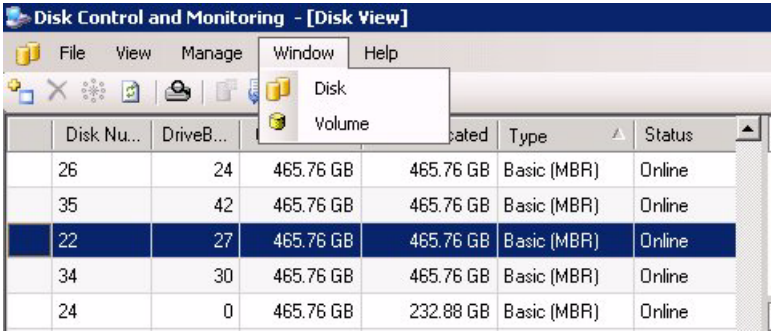
FIGURE 10-11 Right-Click Disk View Manage Menu



Window Menu

The Window menu includes the following commands:

FIGURE 10-12 Disk View Window Menu

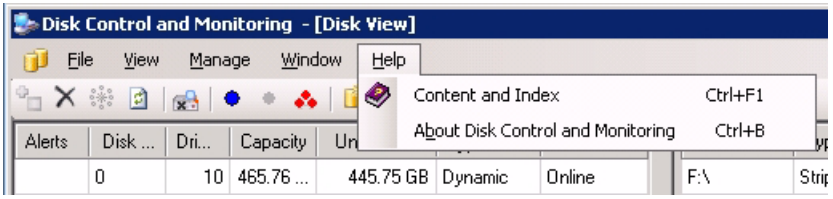


Menu Item	Command Description
Disk	View the Disk View document
Volume	View the Volume document

Help Menu

The Help menu includes the following commands:

FIGURE 10-13 Disk View Help Menu

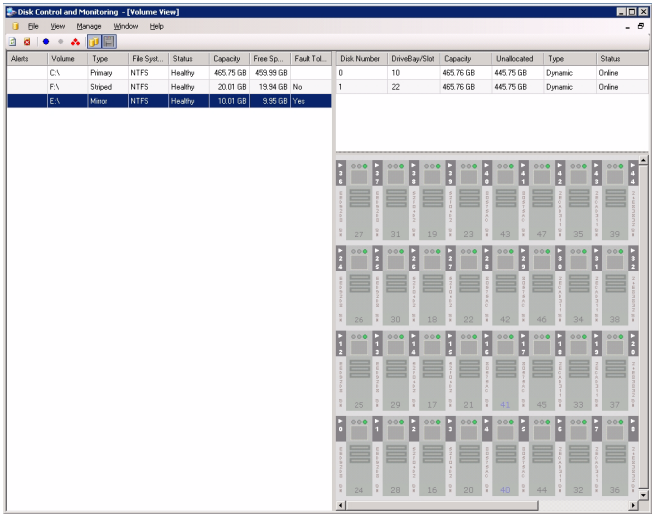


Menu Item	Command Description
Help	Content and Index is displayed in Help content.
About Disk Control and Monitoring	Displays the current version of the application.

Volume View Commands

This section describes the commands in the Volume View document.

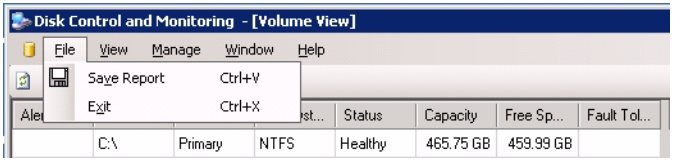
FIGURE 10-14 Example Volume View for X4500 Server



File Menu

The File Menu includes the following commands:

FIGURE 10-15 Volume View File Menu

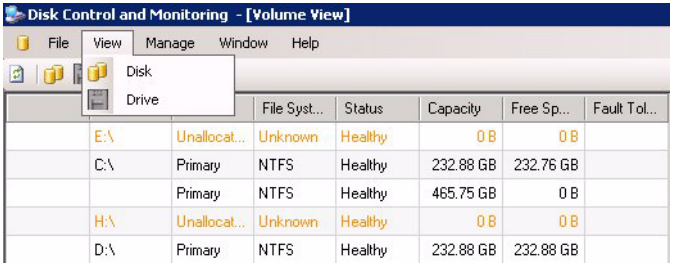


Menu Item	Command Description
Save Report	Saves the Volume View document panes to Comma Separated Values (CSV) or XML file.
Exit	To exit DCM.

View Menu

The View Menu includes the following commands:

FIGURE 10-16 Volume View View Menu

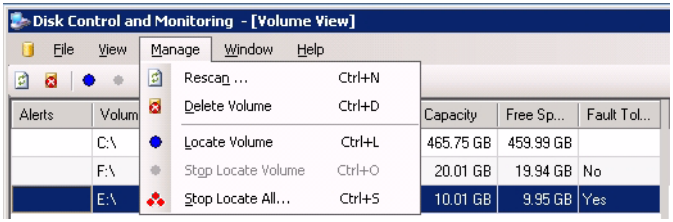


Menu Item	Command Description
Disk	Shows or hides the Disk pane in the Volume View document.
Drive	Shows or hides the Disk pane in the Volume View document.

Manage Menu

The Manage Menu includes the following commands:

FIGURE 10-17 Volume View Manage Menu



- "Rescan" on page 100
- "Delete Volume" on page 101
- "Locate Volume" on page 101
- "Stop Locate Volume" on page 101
- "Stop Locate All" on page 102
- "Right-Click Volume View Manage Menu" on page 102

Rescan

Rescan allows you to scan for updated disk configurations such as added or removed disks.

- **Click the Rescan command.**

DCM performs the following actions:

- Updates the Disk Volume and Drive Map panes.
- Automatically rescans and updates the disk configuration.

Delete Volume

Delete Volume deletes volumes on one or more disk drives.

1. Select a Dynamic Volume to delete.

2. Click the **Delete Volume** command.

DCM performs the following actions:

- Updates the Disk Volume and Drive Map panes.
- Automatically rescans and updates the disk information.

Locate Volume

Turns on the blue LED for all the disks associated with the selected volume.

1. Select the Volume to locate.
2. Click the **Locate Volume** command.

DCM performs the following actions:

- Updates the Disk Volume and Drive Map panes.
- Automatically rescans and updates the disk information.

Stop Locate Volume

Turns off a blue LED that physically locate a disk associated with the selected volume.

1. Select the volume to stop locating
2. Click the **Stop Locate** command.

DCM performs the following actions:

- Updates the Disk Volume and Drive Map panes.
- Automatically rescans and updates the disk information.

Stop Locate All

Turns off all blue LEDs that physically locate all the disks associated with the volumes.

- **Click the Stop Locate All command.**

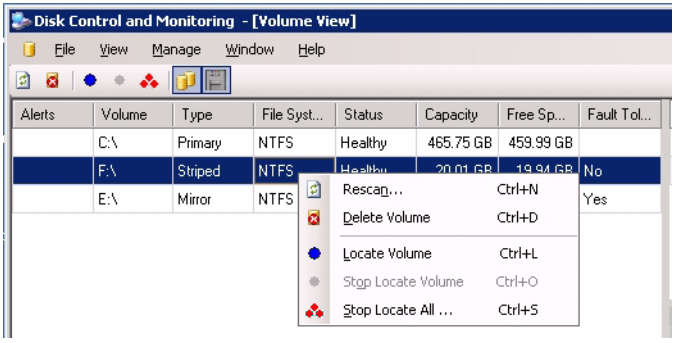
DCM performs the following actions:

- Updates the Disk Volume and Drive Map panes.
- Automatically rescans and updates the disk information.

Right-Click Volume View Manage Menu

You can also right-click on a selected disk to invoke the Manage menu items, as illustrated below.

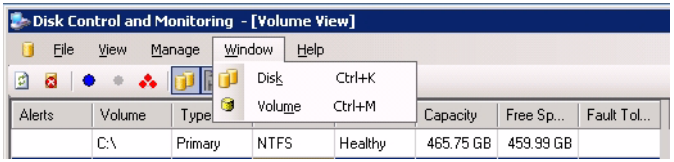
FIGURE 10-18 Right-Click Manage menu Volume View



Window Menu

The Window Menu includes the following commands:

FIGURE 10-19 Volume View Window Menu

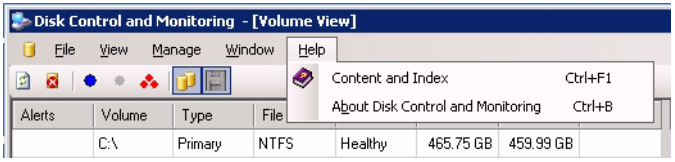


Menu Item	Command Description
Disk	View the Disk View document.
Volume	View the Volume View document.

Help Menu

The Help menu includes the following commands:

FIGURE 10-20 Volume View Help Menu



Menu Item	Command Description
Help	Contents and Index displays Help content.
About Disk Control and Monitoring	Displays the current version of the application.

Uncontrolled Disk Insertion and Removal

DCM supports automatic detection of disk removal and insertion. If you remove or insert a disk (uncontrolled), the disk is detected and displayed in DCM.

Installing the DCM Remote Client

The Remote Client (CLI) is a method to obtain the information displayed in the DCM Disk View and Volume View documents.

Before you use the DCM Remote Client,

1. Download and install the Microsoft. NET Framework 2.0 from the following download site:

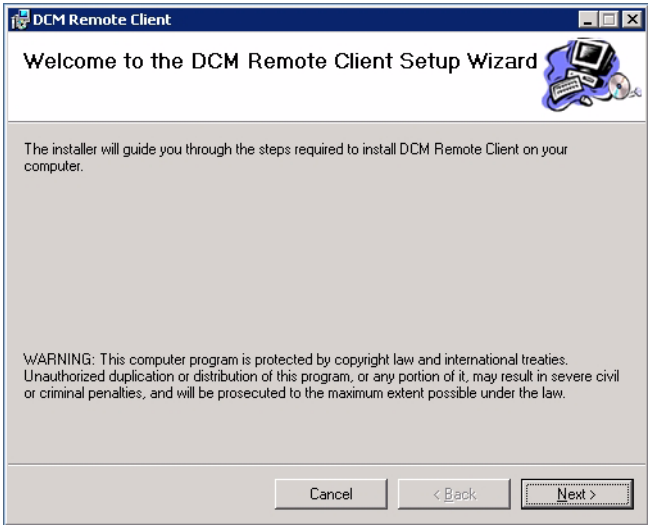
http://www.microsoft.com/downloads/details.aspx?FamilyID=0856EACB-4362-4B0D-8EDD-AAB15C5E04F5&displaylang=en

2. Copy the `DCMRemoteSetup1.0.1.msi` file to the remote machine and install as Administrator. Double-click to start the installation wizard.

DCM Remote Client Wizard Setup

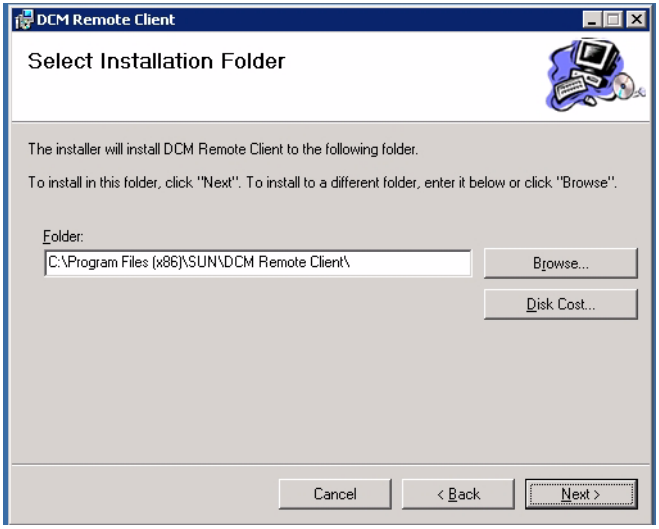
1. The DCM Remote Client Setup Wizard takes you through the steps required to install DCM Remote Client on your computer.

FIGURE 10-21 DCM Remote Client - Select Installation Folder



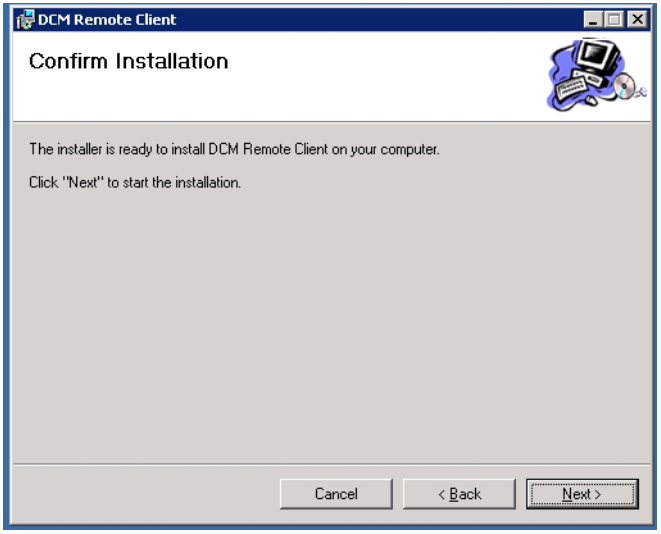
2. Select the folder where you want to install the DCM Remote Client.

FIGURE 10-22 DCM Remote Client Setup Wizard



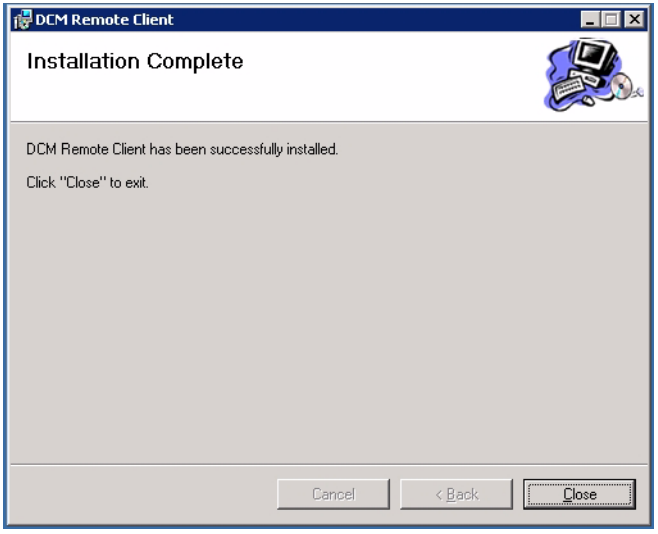
3. Confirm the installation. The DCM Remote Client Wizard confirms the completion of the installation.

FIGURE 10-23 DCM Remote Client - Installation Complete



4. The installation is complete. Close window.

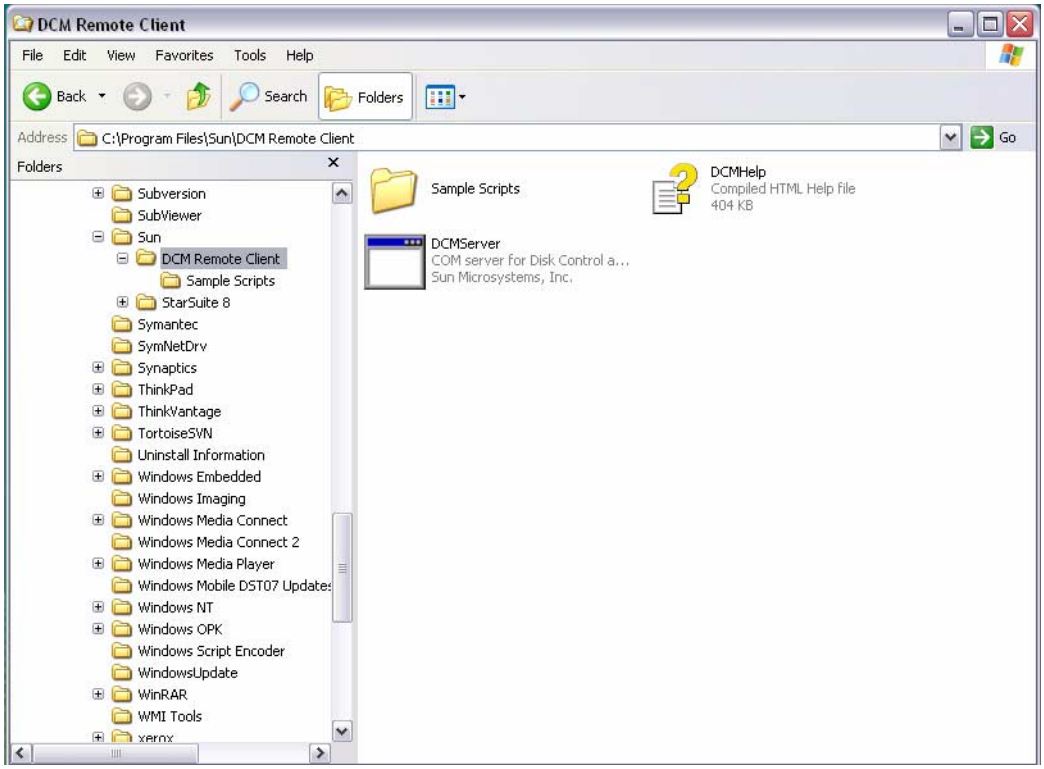
FIGURE 10-24 Confirm Installation of DCM Remote Client



Remote Client Sample Scripts

The DCM Remote Client Sample Scripts are stored in the DCM Remote Client folder, located at `C:\Program Files\Sun\DCM Remote Client\Sample Scripts`.

FIGURE 10-25 DCM Remote Client Folder



Modifying Each Sample Script

Each script must be modified with the Sun Fire server host name on the following line:

```
Set DCMService = CreateObject ("DCM.DCMService", "Server
Machine Name")
```

where `"Server Machine Name"` is the host name of your Sun Fire server.

▼ To Run the Remote Scripts

To run the remote scripts you use the Windows `runas` command.

1. Open a terminal window.
2. Enter the following command:

```
runas  /netonly /user:Administrator  "cmd.exe /K cscript c:\
progra~1\SUN\DCMREM~1\SAMPLE~1\scriptname.vbs"
```

Where the `script name.vbs` is the name of the remote script you want to run.

You see the following output on the screen:

```
Enter the password for Administrator:
```

1. Enter your server Administrator password.
2. Press Return or Enter.

You see the following output on the screen:

```
Attempting to start cmd.exe /K cscript c:\progra~1\SUN\DCMREM~1\
SAMPLE~1\Disklist.vbs as user "ORION\Administrator" ...
```

A new command window appears with the results of the script.

Usage of DCM Remote Sample Scripts

Note – Each Create script needs to be modified prior to use.

TABLE 10-6 Usage of DCM Remote Sample Scripts

Script Name	Usage
Add Disk.vbs	Adds Unallocated (or) Basic (or) Foreign disk to Dynamic'pack. `Usage: AddDisk.vbs <DiskIndex>`
CreateMirrorVol.vbs	Creates Mirrored volume `Usage: CreateMirrorVol.vbs <Create>` Modify the following input values: 1. Change the `Server Machine Name` to your remote machine name. 2. Change the disk index from '13', '14' to the disk index of the disks you want. You can use `DiskList.vbs` to get the disk index. Also, change the disk size from '`1073741824`' to the size of the disks. 3. Change the accessPath from '`J:`' to a drive letter or an empty folder on NTFS. 4. Change the '`DCMTestMirror`' to any name that you want to label the volume.
CreateRAID-5Vol.vbs	Creates RAID-5Vol `Usage: CreateRAID-5Vol.vbs <Create>` Modify the following input values: 1. Change the `Server Machine Name` to your remote machine name. 2. Change the disk index from '20', '21', '22' to the disk index of the disks you want. You can use `DiskList.vbs` to get the disk index. Also, change the disk size from '1073741824' to the size of the disks. 3. Change the accessPath from '`I:`' to a drive letter or an empty folder on NTFS. 4. Change `DCMTestRAID-5` to any name that you want to label the volume.

TABLE 10-6 Usage of DCM Remote Sample Scripts

Script Name	Usage
CreateSimpleVol.vbs	Creates Simple volume `Usage: CreateSimpleVol.vbs <Create>` Modify the following input values: 1. Change the `Server Machine Name` to your remote machine name. 2. Change the disk index from '15' to the disk index of the disks you want. You can use the `DiskList.vbs` to get the disk index. Also, change the disk size from '1073741824' to the size of the disks. 3. Change the access Path from '`L:`' to a drive letter or an empty folder on NTFS. 4. Change `DCMTestSimple` to any name that you want to label the volume.
CreateSpannedVol.vbs	Creates Spanned volume `Usage: CreateSpannedVol.vbs <Create>` Modify the following input values: 1. Change the 'Server Machine Name' to your remote machine name. 2. Change the disk index from '16', '17', '18' to the disk index of the disks you want. You can use `DiskList.vbs` to get the disk index. Also, change the disk size from '1073741824' to the size of the disks. 3. Change the accessPath from '`K:`' to a drive letter or an empty folder on NTFS. 4. Change `DCMTestSpanned` to any name that you want to label the volume.
CreateStripedVol.vbs	Creates Striped volume `Usage: CreateStripedVol.vbs <Create>` Modify the following input values: 1. Change the `Server Machine Name` to your remote machine name. 2. Change the disk index from '16', '17', '18' to the disk index of the disks you want. You can use `DiskList.vbs` to get the disk index. Also, change the disk size from '1073741824' to the size of the disks. 3. Change the accessPath from '`H:`' to a drive letter or an empty folder on NTFS. 4. Change `DCMTestStriped` to any name that you want to label the volume.
DiskList.vbs	Lists all disk indexes, their disk number, and slot number. Usage: DiskList.vbs

TABLE 10-6 Usage of DCM Remote Sample Scripts

Script Name	Usage
LocateDisk.vbs	Locates the disk. `Usage: LocateDisk.vbs <Disk Index> <start/stop/stopAll>`
RemoveDisk.vbs	`Removes the disk from current dynamic pack.` `Usage: RemoveDisk.vbs <Disk Index>`
VolumeList.vbs	List all available volumes.

DCM Classes

Disk Control and Monitoring (DCM) provides classes that expose methods for querying, configuring, and maintaining Sun Fire X4500 or X4540 server disks. The following table lists available Classes.

TABLE 10-7 DCM Classes

Classes	Description
CDCMService	DCM Service that initializes and populates disk objects and volume objects.
CDCMDisk	Class provides method to query and configure disks.
CDCMBasicDisk	Class provides method to configure basic disks.
CDCMDynamicDisk	Class provides method to configure dynamic disks.
CDCMForeignDisk	Class provides method to configure foreign disks.
CDCMUnInitializedDisk	Class provides method to configure Unallocated disks.
CDCMDiskFRUInfo	Class provides method to get the disk FRU information.
CDCMDiskExtent	Class provides method to get the details of the extent on a disk.
CDCMVolume	Class provides method to query and configure volumes.
CDCMBasicVolume	Class provides method to configure basic volume.
CDCMDynamicVolume	Class provides method to configure dynamic volume.
CDCMVolumeExtent	Class provides methods to get the details of the volume extent.
CDCMCreateVolumeIntf	Class provides methods to create volume.

CDCMService

Method	Description
getNumDisk	Returns the number of disks.
getDisk	Returns the disk corresponding to the index.
getNumVolume	Returns the number of volumes.
getVolume	Returns the volume corresponding to the volume number.
init	Initializes the service.
scan	Scans for any changes.
scan	Returns the disk object of the specified Slot.
getSlotLEDStatus	Returns the LED status of the specified Slot.
getStatusChange	Gets the status change.

getNumDisk

```
ULONG getNumDisk(void);
```

This method returns the number of disk objects available in DCM Service.

Parameters

This method has no parameters.

Return Values

Returns the number of disks.

getDisk

```
CDCMDisk getDisk(ULONG DiskIx);
```

This method returns the disk object at the specified index.

Parameters

`DiskIx`

[in] Index of the disk in the DCM Service.

Return Values

Returns the disk object for the given index.

getNumVolume

```
ULONG getNumVolume(void);
```

This method returns the number of volume objects available in DCM Service.

Parameters

This method has no parameters.

Return Values

Returns the number of volume available in the DCM Service.

getVolume

```
CDCMVolume getVolume(ULONG VolNum);
```

This method returns the volume object for the given volume number.

Parameters

`VolNum`

[in] Internal volume number of the DCM Service.

Return Values

Returns the volume object for the given number.

init

```
ULONG init(void);
```

This method initializes the DCM Service.

Parameters

This method has no parameters.

Return Values

Returns 0 if the initialization is successful, otherwise -1.

scan

```
ULONG scan(void);
```

This method scans for changes and populates all the Disk and Volume objects.

Parameters

This method has no parameters.

Return Values

Returns 0 if scan operation successful, otherwise -1.

getDiskAtSlot

```
ULONG getDiskAtSlot(
   ULONG SlotNum
 );
```

This method returns the internal disk index of the given Slot number.

Parameters

`SlotNum`

[in] Slot Number of the physical disk.

Return Values

Returns the Disk index for the given slot number.

getSlotLEDStatus

```
ULONG getSlotLEDStatus(
   ULONG SlotNum
);
```

This method returns the slot LED status.

Parameters

SlotNum

[in] Slot number of the disk.

Return Values

Returns the LED status for the given slot number.

LED Status	Value
Ready	1
Fault	2
OK To Remove	4

getStatusChange

```
ULONG getStatusChange(void);
```

This method returns the last event type. Returns 1, if a disk is removed from the system. Returns 2, if a disk is added to the system.

Parameters

This method has no parameters.

Return Values

Returns the last event type.

CDCMDisk

Method	Description
getDiskNum	Returns the disk number for the disk.
getPhysicalLocation	Returns the physical location of the disk.
getCapacity	Returns the size of the disk.
getStatus	Returns the current status of the disk.
getType	Returns the type of the disk.
getUnallocated	Returns the unallocated size of the disk.
locate	Locates the disk by blinking LEDs.
getFRU	Returns the FRU from the disk.
getBMCFRU	Returns the FRU information stored in the BMC.
getDiskImp	Returns the disk implementer interface.
getNumExtent	Returns the number of extents in the disk.
getExtent	Returns the extent corresponding to the index.
syncFRU	Synchronizes the FRU information.
getPartitionType	Returns the Partition type of the disk.
getDiskGUID	Returns the GUID of the disk.

getDiskNum

```
ULONG getDiskNum(void);
```

Parameters

This method has no parameters.

Return Values

This method returns the windows disk number. If the windows disk number is not present, the value 100 or greater than hundred will be returned.

getPhysicalLocation

```
BSTR getPhysicalLocation(void);
```

Parameters

This method has no parameters.

Return Values

This method returns the Drive Bay/Slot Number string. If the slot number is not present, the string "-" will be returned.

getCapacity

```
ULONGLONG getCapacity(void);
```

Parameters

This method has no parameters.

Return Values

This method returns the total size of the disk.

getStatus

```
ULONG getStatus(void);
```

Parameters

This method has no parameters.

Return Values

This method returns the availability of a physical disk A disk can return status online, even if the containing pack returns offline.

Disk Status

Disk Status	Value
Online	1
Not Ready	2
No Media	3
Failed	4
Missing	5

getType

```
ULONG getType(void);
```

Returns the type of the disk.

Parameters

This method has no parameters.

Return Values

This method returns the type of the disk.

Disk Type	Value
Basic	0
Dynamic	1
Foreign	2
Unallocated	3

getUnallocated

```
ULONGLONG getUnallocated(void);
```

Unallocated space available in the disk.

Parameters

This method has no parameters.

Return Values

This method returns the unallocated space in the disk.

locate

```
HRESULT locate(
   ULONG flag
 );
```

Parameters

`flag`

[in] value to indicate whether to start or stop locate disk. If the value is 1, DCM will start locate the disk. If the value is 0, DCM will stop locating the disk.

Return Values

This method returns the standard values S_OK (0x00000000L) and E_FAIL (0x80004005L).

getFRU

```
CDCMDiskFRUInfo getFRU(void);
```

This method returns the disk FRU information object CDCMDiskFRUInfo

Parameters

This method has no parameters.

Return Values

Returns the disk FRU information object.

getBMCFRU

```
CDCMDiskFRUInfo getBMCFRU(void);
```

This method fetches the FRU information stored in BMC (Baseboard Management Controller) for the disk.

Parameters

This method has no parameters.

Return Values

Returns the FRU information stored in the BMC.

getDiskImp

```
CDCMDisk getDiskImp(void);
```

This method returns the Disk implementation object based on the disk type.

Parameters

This method has no parameters.

Return Values

Returns either of the following disk objects based on the disk type

CDCMBasicDisk

CDCMDynamicDisk

CDCMUnallocatedDisk

CDCMForeignDisk

getNumExtent

```
ULONG getNumExtent(void);
```

This method returns the number of extents for the disk.

Parameters

This method has no parameters.

Return Values

Returns the number of disk extents.

getExtent

```
CDCMDiskExtent getExtent(
   ULONG ExtentIx
 );
```

This method returns the Disk Extent object (CDCMDiskExtent) for the specified index.

Parameters

`ExtentIx`

[in] Index of the disk Extent.

Return Values

Returns the Disk extent object.

syncFRU

```
HRESULT syncFRU();
```

This method synchronizes the disk FRU information in the BMC.

Parameters

This method has no parameters.

Return Values

This method returns the standard values S_OK and E_FAIL.

getPartitionType

```
ULONG getPartitionType(void);
```

This method returns the partition type of the disk.

Parameters

This method has no parameters.

Return Values

Returns the partition type of the disk.

Partition Style	Value
MBR (Master boot record)	0
GPT (GUID partition table)	1
Unknown	2

getDiskGUID

```
GUID getDiskGUID(void);
```

This method returns the GUID of the disk.

Parameters

This method has no parameters

Return Values

Returns the GUID of the disk.

CDCMBasicDisk

Method	Description
add	Adds the basic disk to the online pack

add

```
HRESULT add (void)
```

The add method adds the basic disk into the dynamic online pack. Converts the basic to dynamic disk.

Parameters

This method has no parameters.

Returns

This method returns the standard values `S_OK (0x00000000L) and E_FAIL (0x80004005L)`.

CDCMDynamicDisk

Method	Description
remove	Reactivates failing or failed disk.
reactivate	Reactivates failing or failed disk.

remove

```
HRESULT remove();
```

This method removes the disk from online dynamic pack. After removing from the dynamic pack, the disk becomes a basic disk.

Parameters

This method has no parameters.

Return Values

This method returns the standard values S_OK (`0x00000000L`) and `E_FAIL (0x80004005L)`.

reactivate

```
HRESULT reactivate();
```

The reactivate method returns a failing or failed disk to a healthy state, if possible. Although this method attempts to return a disk to a healthy state, it does not always succeed.

Parameters

This method has no parameters.

Return Values

This method returns the standard values `S_OK (0x00000000L)` and `E_FAIL (0x80004005L)`.

CDCMForeignDisk

Method	Description
importToPack	Imports the disk to the online dynamic pack.

importToPack

Imports the disk to the online dynamic pack.

```
HRESULT importToPack();
```

This method imports all the disks from the same pack or disk group to online dynamic pack.

Parameters

This method has no parameters.

Return Values

This method returns the standard values `S_OK (0x00000000L)` and `E_FAIL (0x80004005L)`.

CDCMUnInitializedDisk

Method	Description
add	Adds to the pack

add

```
HRESULT add();
```

The add method adds a disk to a online dynamic pack. This method initializes a disk that has no partitioning defined and adds it to the pack.

Parameters

This method has no parameters.

Return Values

This method returns the standard values `S_OK (0x00000000L)` and `E_FAIL (0x80004005L)`.

CDCMDiskFRUInfo

Method	Description
vendor	Returns the vendor string
model	Returns Model
serialNum	Returns serial number
FWVersion	Returns FW Version
capacity	Returns capacity

vendor

```
BSTR vendor(void);
```

This method returns the vendor name string of the disk.For devices that have no vendor identifier, the value is zero.

Parameters

This method has no parameters.

Return Values

Returns the vendor name string.

model

```
BSTR model(void);
```

This method returns the model of the disk. For devices that have no model string, the value is zero.

Parameters

This method has no parameters.

Return Values

Returns the model of the disk.

serialNum

```
BSTR serialNum(void);
```

This method returns the serial number of the disk.For devices that have no serial number, the value is zero.

Parameters

This method has no parameters.

Return Values

Returns the serial number of the disk.

FWVersion

```
BSTR FWVersion(void);
```

This method returns the Firmware version of the disk. For devices that have no product revision, the value is zero.

Parameters

This method has no parameters.

Return Values

Returns the Firmware version.

capacity

```
BSTR capacity(void);
```

This method returns the capacity of the disk in bytes.

Parameters

This method has no parameters.

Return Values

Returns the capacity of the disk in bytes.

CDCMDiskExtent

Method	Description
getVolumeNum	Returns the volume number of this extent.
getOffset	Returns the offset of this disk extent.
getSize	Returns the size of the extent.

getVolumeNum

```
ULONG getVolumeNum(void);
```

This method returns the internal volume number.

Parameters

This method has no parameters.

Return Values

Returns the internal volume number.

getOffset

```
ULONGLONG getOffset(void);
```

This method returns the disk offset.

Parameters

This method has no parameters.

Return Values

Returns the disk offset.

getSize

```
ULONGLONG getSize(void);
```

This method returns the size of the extent in bytes.

Parameters

This method has no parameters.

Return Values

Returns the size of the extent.

CDCMVolume

Method	Description
getType	Returns the type of the volume.
getPath	Returns the path string.
getFileSystem	Returns the file system type.
getStatus	Returns the status of the volume.
getSize	Returns the size of the volume.
getFreeSpace	Returns the free space in the volume.
getNumExtent	Returns the number of extents in the volume.
getExtent	Returns the extent corresponding to the index.
getVolumeImp	Returns the underlying volume.
getVolumeGUID	Returns the GUID of the Volume.
getHealth	Returns the health of the volume.

getType

```
LONG getType(void);
```

This method returns the type of the volume.

Parameters

This method has no parameters.

Return Values

Returns the type of the volume.

Volume Type	Value
Basic	0
Dynamic	1

getPath

```
BSTR getPath(void);
```

This method returns the path to the volume.

Parameters

This method has no parameters.

Return Values

Returns the path to the volume.

getFileSystem

```
ULONG getFileSystem(void);
```

This method returns the file system type.

Parameters

This method has no parameters.

Return Values

Returns the file system type.

Volume Status	Value
Unknown	0
Online	1
No Media	2
Failed	3

getStatus

```
ULONG getStatus(void);
```

This method returns the status of the volume.

Parameters

This method has no parameters.

Return Values

Returns the status of the volume.

Volume Status	Value
Unknown	0
Online	1
No Media	2
Failed	3

getSize

```
ULONGLONG getSize(void);
```

This method returns the size of the volume.

Parameters

This method has no parameters.

Return Values

Returns the size of the volume.

getFreeSpace

```
ULONGLONG getFreeSpace(void);
```

This method returns the free space available in the volume.

Parameters

This method has no parameters.

Return Values

Returns the free space available in the volume.

getNumExtent

```
ULONG getNumExtent(void);
```

This method returns the number of extents available in the volume.

Parameters

This method has no parameters.

Return Values

Returns the number of extents available in the volume.

getExtent

```
CDCMVolumeExtent getExtent(
   ULONG ix,
 );
```

This method returns the volume extent object.

Parameters

`ix`

[in] Index of the disk extent.

Return Values

Returns the volume extent object.

getVolumeImp

```
CDCMVolme getVolumeImp(void);
```

This method returns the underlying volume implementation.

Parameters

This method has no parameters.

Return Values

Returns the underlying volume implementation. The following are the possible volume object types:

CDCMBasicVolume

CDCMDynamicVolume

getVolumeGUID

```
BSTR getVolumeGUID(void);
```

This method returns the GUID of the volume.

Parameters

This method has no parameters.

Return Values

Returns the GUID of the volume.

getHealth

```
ULONG getHealth(void);
```

This method returns the health of the volume object.

Parameters

This method has no parameters.

Return Values

Returns the health of the volume object.

Health	Value
Unknown	0
Healthy	1
Rebuilding	2
Stale	3
Failing	4
Failing Redundancy	5
Failed Redundancy	6
Failed Redundancy Failing	7
Failed	8

CDCMBasicVolume

Method	Description
getPartitionType	Returns the partition type.

getPartitionType

```
ULONG getPartitionType(void);
```

This method returns the partition type of the volume.

Parameters

This method has no parameters.

Return Values

This method returns the partition type of the volume.

Partition Style	Value
MBR (Master Boot Record)	0
GPT (GUID partition table)	1
Unknown	2

CDCMDynamicVolume

Returns the volume type

Method	Description
getVolumeType	Returns the volume type.
isFaultTolerant	Returns 1 if fault tolerant.
IsOnline	Returns whether the volume is in online pack.
deleteVolume	Deletes the current volume.

getVolumeType

```
ULONG getVolumeType(void);
```

This method returns the volume type.

Volume Type	Value
Simple	0
Spanned	1
Striped	2
Mirrored	3
RAID-5	4
Unknown	5

Parameters

This method has no parameters.

Return Values

Returns the volume type.

isFaultTolerant

```
ULONG isFaultTolerant(void);
```

This method returns whether the volume is fault tolerant. Returns 1 if it is fault tolerant, otherwise 0.

Parameters

This method has no parameters.

Return Values

Returns whether the volume is fault tolerant.

IsOnline

```
ULONG IsOnline(void);
```

This method returns whether the volume is in online pack. Returns 1 if it is in online pack, otherwise 0.

Parameters

This method has no parameters.

Return Values

Returns whether the volume is in online pack.

deleteVolume

```
HRESULT deleteVolume();
```

Deletes the volume from the system.

Parameters

This method has no parameters.

Return Values

This method returns the standard values S_OK (0x00000000L) and E_FAIL (0x80004005L).

CDCMVolumeExtent

Method Description

Method	Description
getDisk	Returns the disk
getSize	method getSize

getDisk

```
LONG getDisk(void);
```

This method returns the DCM internal disk number.

Parameters

This method has no parameters.

Return Values

Returns the disk number.

getSize

```
ULONGLONG getSize(void);
```

This method returns the size of the extent in bytes.

Parameters

This method has no parameters.

Return Values

Returns the size of the extent.

CDCMCreateVolumeIntf

Method Description

Method	Description
addAccessPath	Adds the access Path to the new volume.
addInputDisk	Adds the input disk parameters for the new volume.
create	Creates new volume.
init	Initialize the Create volume Interface.
setFormatInfo	Set the parameters to format the new volume.

addAccessPath

```
HRESULT addAccessPath(

    BSTR accessPath

 );
```

Adds an access path. An access path can be a path to an empty folder or a drive letter.

Parameters

`accessPath`

[in] String indicating the access path. If the access path is a drive letter, you must include a trailing backslash; "E:' is an example.

Return Values

This method returns the standard values `S_OK (0x00000000L)` and `E_FAIL (0x80004005L)`.

addInputDisk

```
HRESULT addInputDisk(

     ULONG diskIx,

     ULONGLONG  diskSize

 );
```

Adds the input disk parameters. If you want to add N disk parameters, you have to call this method N times.

Parameters

diskIx

[in] Index value of the disk.

diskSize

[in] Size of the disk in bytes.

Return Values

This method returns the standard values `S_OK (0x00000000L)` and `E_FAIL (0x80004005L)`.

create

```
HRESULT create(

    LONG volumeType

 );
```

Creates the specified type of volume.

Parameters

`volumeType`

[in] Volume types are simple, spanned, striped (RAID-0), mirrored, or striped with parity (RAID-5).

Volume Type	Value
Simple	10
Spanned	11
Striped	12
Mirrored	13
RAID-5	14

Return Values

This method returns the standard values `S_OK (0x00000000L)` and `E_FAIL (0x80004005L)`.

init

```
HRESULT init()
```

Initializes the create volume interface.

Parameters

This method has no parameters

Return Values

This method returns the standard values `S_OK (0x00000000L)` and `E_FAIL (0x80004005L)`.

setFormatInfo

```
HRESULT setFormatInfo(
    LONG fileSystemType,
    BSTR volumeLabel,
    ULONG allocationUnitSize,
    LONG force,
    LONG quickFormat,
    LONG enableCompression
 );
```

The setFormatInfo method specifies the attributes to format a file system on the current volume.

Parameters

`fileSystemType`

[in] File system type

File System Type

File System Type	Value
RAW	1
FAT	2
FAT32	3
NTFS	4
CDFS	5
UDF	6

volumeLabel

[in] String representing the file system label

allocationUnitSize

[in] The size of the allocation unit for the file system in bytes, which is usually between 512 and 65536.

force

[in] If the value is 1, then the file system is formatted unconditionally even while in use; otherwise, the operation fails.

quickFormat

[in] If the value is 1, DCM performs a quick format (it does not verify each sector on the volume).

enableCompression

[in] If the value is 1, compression is enabled on the newly formatted file system. Compression is a feature of NTFS, and is ignored for FAT and FAT32

Return Values

This method returns the standard values `S_OK (0x00000000L)` and `E_FAIL (0x80004005L)`.

APPENDIX **A**

Configure Windows Network Communication Settings With Multiple Network Interfaces

This appendix provides information you should consider when configuring the Windows network communication settings with multiple Sun Fire server network interfaces.

Topics in this appendix include:

Determine Which Network Data Ports Are Actively Connected to a Network

By using Microsoft's Network Connections folder, you can visually determine which server network ports are actively connected to a network. To access the Network Connections folder, follow this step:

- **Click Start -> Settings -> Control Panel-> Network Connections.**

  The Network Connections folder appears identifying the actively connected data ports.

FIGURE A-1 Network Connections Window

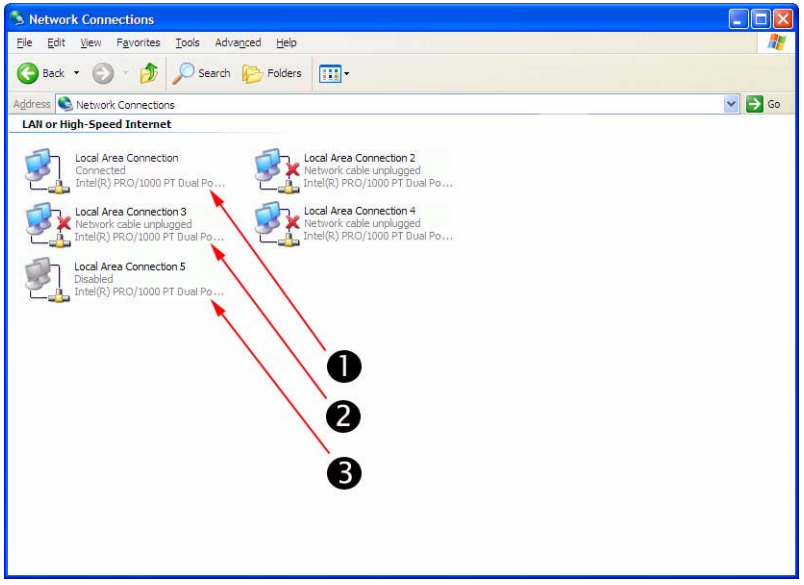


Figure Legend

1	An active port connection
2	A red X marks the port connections that are currently inactive.
3	The port has been manually disabled (right-click to re-enable).

Confirm Physical Port MAC Addresses and Match Them to Window Device Names

To confirm the MAC addresses of installed network interface ports and to match them to the Windows Device Friendly Names, you will need to open a command prompt and run `ipconfig /all`.

To open a Windows command prompt and run `ipconfig /all` follow these steps:

1. **Click -> Start -> Run.**

   The Run dialog box appears.

2. **In the Run dialog box, type `cmd` then click OK.**

   The cmd.exe DOS window appears.

3. **In the cmd.exe DOS window, enter the command:** `ipconfig /all`

   The output from the `ipconfig /all` command identifies the installed network interface ports by the connection name in the order of enumeration.

Note – The output does not necessarily follow an alpha or numeric order. You can customize the connection name in the Network Connections folder for details, see Microsoft's documentation. The output below illustrates how the Windows operating system, by default, assigns logical names to network interfaces.

FIGURE A-2 Second and First Ethernet Adapter Ports in Output

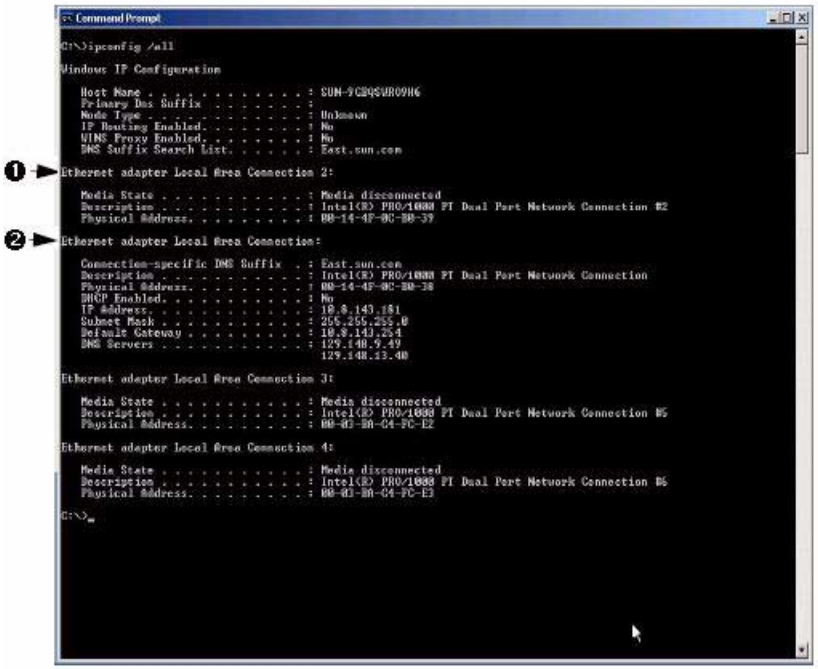


Figure Legend

1	Second Ethernet adapter port.
2	First Ethernet adapter port.

In the sample output:

- `Ethernet Adapter Local Area Connection` is the Windows default logical name (friendly name) assigned to a network interface.

Note – The first *Ethernet Adaptor Local Area Connection* appears with a null value. This entry identifies the connection-specific DNS suffix (for example, `east.sun.com`) and the physical MAC address for that port.

- `Ethernet Adapter Local Area Connection 2` identifies a disconnected media state, a description, and the physical MAC address for that port.
- The numeric value following the Windows logical friendly name refers to the network connection number.

Index